

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE <i>9 Dec 96</i>		3. REPORT TYPE AND DATES COVERED
4. TITLE AND SUBTITLE <i>Incentivizing the Government Contractor to Environmentally Envoate: Alternatives For Action.</i>			5. FUNDING NUMBERS	
6. AUTHOR(S) <i>Walters Crawford Roberts, Jr.</i>				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <i>George Washington University</i>			8. PERFORMING ORGANIZATION REPORT NUMBER <i>96-087</i>	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) DEPARTMENT OF THE AIR FORCE AFIT/CI 2950 P STEET, BLDG 125 WRIGHT-PATTERSON AFB OH 45433-7765			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT <i>Unlimited</i>			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)				
14. SUBJECT TERMS			15. NUMBER OF PAGES <i>98</i>	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to ***stay within the lines*** to meet ***optical scanning requirements***.

Block 1. Agency Use Only (Leave blank).

Block 2. Report Date. Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

Block 3. Type of Report and Dates Covered. State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

Block 4. Title and Subtitle. A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C - Contract	PR - Project
G - Grant	TA - Task
PE - Program Element	WU - Work Unit Accession No.

Block 6. Author(s). Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

Block 7. Performing Organization Name(s) and Address(es). Self-explanatory.

Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es). Self-explanatory.

Block 10. Sponsoring/Monitoring Agency Report Number. (If known)

Block 11. Supplementary Notes. Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

Block 12a. Distribution/Availability Statement. Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

DOD - See DoDD 5230.24, "Distribution Statements on Technical Documents."

DOE - See authorities.

NASA - See Handbook NHB 2200.2.

NTIS - Leave blank.

Block 12b. Distribution Code.

DOD - Leave blank.

DOE - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

NASA - Leave blank.

NTIS - Leave blank.

Block 13. Abstract. Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code (*NTIS only*).

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

Incentivizing the Government Contractor to Environmentally Innovate:
Alternatives for Action

By
Walter Crawford Roberts, Jr.

B.S. December 1981, Florida State University
J.D. May 1987, Holland Law School of the University of Florida

A Thesis submitted to

The Faculty of

The National Law Center

of The George Washington University
in partial satisfaction of the requirements
for the degree of Master of Laws

September 30, 1996

Thesis directed by
Laurent Hourclé
Associate Professor of Environmental Law

19961213 081

**Incentivizing the Government Contractor to Environmentally Innovate:
Alternatives for Action**

Table of Contents

I. <i>Why are incentives needed?</i>	2
A. Background	2
1. Command and Control	2
a. Description	2
b. Benefits	3
c. Problems with Command and Control	4
2. Market Based Incentives	8
a. Details	8
b. Benefits	10
c. Problems with Market Based Incentives	13
B. Basis for Government Action	14
1. Legislative Pronouncements of Need	14
2. Executive Pronouncements of Need	18
3. DOD Pronouncements	21
C. Problems Incentivizing Innovation	25
1. Replacement for Current System	25
2. Start Up Costs	26
3. Loss of Goal	26
4. Changing the Mission	27
5. Fear of Risks	28
6. Limit the Bureaucracy	29
7. Good Information Systems	29
8. Incentive Effectiveness	30
D. Environmental Innovation Beyond-Compliance	31
1. Pollution Prevention	32
2. Reflexive Programs - Management Auditing	33
a. EMAS and BS	33
b. ISO 14000	34
c. Problems	36
3. Environmental Technology	38
II. <i>Contract Incentives</i>	40
A. Monetary	41
1. Award Fee	41
a. How It Works	42
b. Contract Writing	44
c. Award Evaluation and Payment	46
d. Benefits	47
e. Problems	48
2. Value Engineering	51
a. The FAR Value Engineering Program	52

b. Other Value-Engineering Type Programs	55
c. Benefits	56
d. Problems	57
3. Allowable Costs	57
a. Public Relations and Advertising Costs	59
b. Fines, Penalties, and Mischarging Costs	59
c. Idle Facilities and Equipment	60
d. Independent Research and Development, and Bid and proposal Costs	60
e. Interest and other financial costs	61
f. Organization Costs	62
g. Precontract Costs	62
h. Depreciation of Capital Equipment	62
i. Gains and Losses on Depreciable Property	63
j. Plant Reconversion Costs	63
4. Modification to Profit	63
5. Indemnification	64
B. Non-monetary	66
1. Waivers	66
2. Evaluation Criteria in Contract Source Selection	67
III. <i>Tax Incentives</i>	69
A. Use of Taxes as Incentives	70
B. Tax Incentives v. Other Incentives	70
C. Taxes v. Fees	71
D. Positive Environmental Taxation Devices versus Negative Environmental Taxation Devices: Pros and Cons	72
1. Negative Environmental Taxation Devices - Environmental Taxes	72
2. Positive Environmental Taxation Devices - Tax Exemptions, Credits, Deductions, etc.	74
3. Energy Taxes	77
B. Susceptible Taxation	78
C. Tax Incentive Forms	80
D. Survey of Positive Taxation Incentives	82
E. Summary of Tax Incentives	85
III. <i>Environmental Incentives</i>	86
A. Waivers	86
B. Emissions Trading	89
1. Details	89
2. Examples	90
3. Benefits	91
4. Problems	92
C. Direct Subsidies	94
IV. <i>Conclusion</i>	97

Incentivizing the Government Contractor to Environmentally Innovate: Alternatives for Action

Experts in both government and industry have long advocated the need to go beyond basic compliance with command and control laws and regulations in the environmental arena. Their thoughts are that efforts in the beyond-compliance area will be innovative, efficient, and business enhancing. From the evidence to date these experts are correct. One specific area that can also benefit from beyond-compliance efforts is government procurement. Government contractors have long been identified as a cohesive but independent group. They all have the same customers and in most cases their contracts are governed by one set of rules, the Federal Acquisition Regulations (FAR).

This article will explore the alternatives the Federal Government can use to incentivize contractors to go beyond-compliance.¹ Beyond-compliance environmental innovation means reducing emissions from contractor factories, establishing environmentally friendly practices and devising engineering changes to the products they create that will benefit the environment and the Government for years to come. Environmental innovation in products and services bought by the government can be more productive than changes

¹ We will look at three different approaches to incentivization. One approach is to use devices particular to government contracts to incentivize a contractor. The second approach is the use of tax incentives to bring about environmental innovation. The third approach is the use of common environmental market incentives in a government contractor setting. This is not an exhaustive list of possible incentives. For example, negative incentives are not fully explored. Additionally, there are many incentives already in use. For example, patent law can provide a framework for environmental innovation. "By granting the exclusive rights conveyed by a patent, the federal government provides an economic incentive to innovate. Technological progress is promoted by guaranteeing inventors the exclusive right to their inventions long enough for them to reap a just reward without competition from a copyist." Michael A. Gollin, *Patent Law and the Environment/Technology Paradox*, 20 ENVTL. L. REP. 10171 (1990).

made only in factories and other stationary sources government contractors control. For every innovation designed in a government product, the effects are multiplied by the number of products purchased and used by the Government.

I. *Why are incentives needed?*

A. Background

1. Command and Control

"From the beginning of modern environmental regulation, there has been controversy over the best method to attain reasonable environmental pollution control."² The United States has, for the last 20 years, depended on the regulation of environmental impacts through command type laws and agency controls. The dramatic growth of these environmental regulations has been one of the most important recent developments in modern law.³

a. Description

This form of regulation is directed from the top.⁴ The command and control paradigm seeks to control pollution in two ways.⁵ The Government's first option is to establish performance standards for polluters, either in laws or regulations written pursuant to laws (the "command").⁶ These standards are often enforced through a system of permits.⁷ Permits allow industrial firms and other sources of pollution to continue emitting pollutants, but only at regulated rates.⁸ Pollution without a permit or in excess of the limits in the

² John W. Bagby et al., *How Green Was My Balance Sheet?: Corporate Liability and Environmental Disclosure*, 14 VA. ENVTL. L.J. 225 (1995).

³ Perry E. Wallace, *Disclosure of Environmental Liabilities Under the Securities Laws: The Potential of Securities-Market-Based Incentives for Pollution Control*, 50 WASH. & LEE L. REV. 1093 (1993).

⁴ Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U.L. REV. 1227, 1235 (1995).

⁵ Wallace, *supra* note 3, at 1094, 1143.

⁶ *Id.*

⁷ Orts, *supra* note 4, at 1235.

⁸ *Id.*

permits is prohibited.⁹ Government agencies monitor these permit systems as well as other standards not enforced by permits (the "control").¹⁰ An example of this standard and permit option is the Federal Water Pollution Control Act's (FWPCA) National Pollution Discharge Elimination System (NPDES).¹¹ The government's second option is to require uniform technology-based controls for industries or activities that cause pollution.¹² Examples include installation of "best available technologies" for air or water pollution, like scrubbers for smokestacks or catalytic converters for cars.¹³ Violations of any command-and-control laws or regulations bring about administrative or civil fines or criminal prosecutions.¹⁴ Clearly, this command and control structure has affected the business world at a profound level.¹⁵ In fact, the environmental legal system is now a "constant and imposing presence" in the economic, managerial and political lives of most businesses.¹⁶

b. Benefits

This does not mean that the command and control system that predominates the U.S. environmental legal system is a failure or is archaic. The reality is that different types of environmental controls have different effects and some types are better for some situations than other types.¹⁷ This is just as true for command and control regulations and laws. The fact is that many command and control type laws and regulations have effected great

⁹ *Id.*

¹⁰ Wallace, *supra* note 3, at 1094, 1143.

¹¹ 33 U.S.C. § 1313(a) (1994) [The NPDES uses a combination of directed levels of technology with identified and measured levels of pollution in the ambient water. Both standards are made applicable to the individual regulated point source through a permit system.]

¹² Orts, *supra* note 4, at 1235.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ Wallace, *supra* note 3, at 1096, 1144.

¹⁶ *Id.* at 1093.

¹⁷ Marshall J. Breger et al., *Providing Economic Incentives in Environmental Regulation*, 8 YALE J. ON REG. 463 (1991).

environmental changes in remarkable short periods of time.¹⁸ For example, these laws and regulations have significantly reduced air emissions of particulates, lead, and other pollutants, and reduced point-source water pollution discharges.¹⁹ We have made gains in the last 20 years and without these controls pollution would have been much worse.²⁰

There have been calls for the elimination of our present command and control legal system in favor of market incentives or reflexive incentives.²¹ The best answer, however, will probably be found in a combination or "package-deal" of incentives and present regulations.²² "Package deals" have a lot of inbred flexibility that usually will cancel out most of the bad points each one type of incentive may present on their own.²³ Environmental problems involve a complex mixture of conflicting goals and moral norms.²⁴ Multiple goals are best met by a "package-deal" where a mandatory limit on the amount of pollution can be set to protect health while providing dynamic incentives or reflexive elements that will allow the development of technologies that will reduce the pollution below the mandatory levels.²⁵

c. Problems with Command and Control

Calls for the elimination of our present command and control system of environmental controls spring from a number of inherent problems with those controls. Industry considers them overly burdensome and litigation driven.²⁶ This leads to a loss in

¹⁸ *Id.*

¹⁹ Wallace, *supra* note 3, at 1094, 1143.

²⁰ *Id.*

²¹ Reflexive environmental law focuses on enhancing self-referential capacities of social systems and institutions outside the legal system, rather than direct intervention of the legal system itself through agencies, highly detailed statutes, or delegation of great power to courts. Orts, *supra* note 4, at 1232.

²² Breger, *supra* note 17.

²³ *Id.*

²⁴ *Id.* at 479.

²⁵ *Id.*

²⁶ Bagby, *supra* note 2.

international competitive ability.²⁷ No other industrial nation has imposed such burdensome environmental laws and regulation on its domestic industries as has the United States.²⁸ This places U.S. industry at a competitive disadvantage because foreign industry, not subject to such costs, can pass the savings on, undercut prices of U.S. producers, and/or increase their profits, enabling them to attract capital more easily.²⁹ In general, the "uncertain and soaring compliance costs" that appear to be prevalent with command and control systems are a problem.³⁰ Another problem to further frustrate industry is the large bureaucracy created with each new law and regulation.³¹

One type of command and control laws are the provisions requiring the installation of the best available technology or lowest achievable emissions reduction.³² These laws are limited by the technology and scientific knowledge available when the regulations are written.³³ This approach can sometimes inhibit technological improvements by making the least polluter pay more than the most polluter.³⁴ This has happened repeatedly in the air context with New Source Performance Standards that unexpectedly caused the continued use of old dirty factories far beyond their useful life, as well as, with anti-pollution technology applicable to new cars that have kept many older, dirty cars longer on the road.³⁵ Further,

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.* This, of course, discounts the beneficial modernization of plant and equipment and the avoidance of costs suffered by firms less committed to environmental concerns (e.g., tarnished goodwill, higher although postponed cleanup costs, bankruptcy). *Id.*

³⁰ *Id.* at 229. It is not just high costs that appear to be problems but the cost to benefit ratio. We have taken the "easy kills," and any other environmental benefits to be found with similar command and control regulations will cost much more than previously. Breger, *supra* note 17, at 468.

³¹ *Id.* at 469.

³² ARNOLD W. REITZE, JR., AIR POLLUTION LAW 157 (1995).

³³ Beth S. Ginsberg and Cynthia Cummis, *EPA's Project XL: A Paradigm for Promising Regulatory Reform*, 26 ENVTL. L. REP. 10059 (1996).

³⁴ Breger, *supra* note 17, at 465.

³⁵ REITZE, *supra* note 32, at 136; Breger, *Id.*

command-and-control usually means no "balancing" or "cost-benefit" analysis.³⁶ This leads to over regulation or under regulation - neither one good for the environment or the economy.³⁷

This same effect is brought about by the broad brush environmental regulators take and the uniform solutions they develop.³⁸ It is simply too much to require central regulators to determine how each of hundreds of thousands of industrial sources protect the air, water, and land.³⁹ Such a system leads to information processing overload at the center and also limits the industrial solutions to environmental problems because of the central direction of particular end-of-pipe controls.⁴⁰ This problem is expected to increase exponentially as large sources become saturated with regulations and large numbers of small sources are now being looked at for further regulation.⁴¹ Pollution reduction is now exorbitantly expensive compared to the early days of regulatory and enforcement actions.⁴²

Even the fact that pollution control strategies are based on laws that are focused on one type of media at a time is a weakness.⁴³ Industry learned early that cleaning the air is not hard when you can pollute the land instead. Writing laws and regulations one medium at a time results in unnecessary complexity and regulatory redundancies.⁴⁴

A focus shift is needed.⁴⁵ An atmosphere of innovation and creativity is needed and command and control regulations cannot provide that.⁴⁶ Command and control tends to

³⁶ Breger, *Id.*

³⁷ *Id.*

³⁸ *Id.* at 468.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² Ginsberg & Cummis, *supra* note 33.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, TECHNOLOGY FOR A SUSTAINABLE FUTURE: A FRAMEWORK FOR ACTION, ELI-No. AD-321, at 25 (1994).

⁴⁶ Orts, *supra* note 4, at 1280.

focus on end-of-pipe controls and clean-up.⁴⁷ However, dramatic further gains can only be made by looking at how pollution is created and stopping it before it starts.⁴⁸ Command and control regulation does not foster the type of ground-breaking innovation needed to make such gains.⁴⁹ Specifically, frequent changes in environmental regulations create uncertainty which discourages investors, the use of technology-based standards rather than performance-based standards put all the risk on contractors developing new technologies, and the bureaucratic approval delays that are common discourage the development of new technology by reducing the value of the technology.⁵⁰ Small innovative companies that depend on timely, continuous improvements to stay competitive are especially hard-hit by these disincentives.⁵¹ Innovation is usually squelched by heavy-handed penalties - civil and criminal - for any infractions.⁵² Such an atmosphere of fear has built many opponents in Congress where further command and control laws are not favored.⁵³ The prevention of pollution or the clean-up of the environment is just not getting done with the present command and control system.⁵⁴ What is needed is "an approach which is not only more efficient, less litigation-driven, and less bureaucratic than the current program, but also embraces real and innovative reforms." ⁵⁵

⁴⁷ *Id.* at 1332.

⁴⁸ *Id.* at 1280. This is called "pollution prevention."

⁴⁹ *Id.* at 1331.

⁵⁰ H.R. REP. NO. 536, 103rd Cong., 2nd Sess. at 21. (1994).

⁵¹ *Id.*

⁵² Orts, *supra* note 4, at 1280. Environmental managers are probably more effective when approaching environmental issues creatively than when they are charged with a job that has been called, with some basis in legal reality, the "designated jailee." *Id.*

⁵³ *Id.*

⁵⁴ Wallace, *supra* note 3, at 1144.

⁵⁵ *Reform of Superfund Act of 1995: Hearings on H.R. 2500 Before the Subcommittee on Water Resources and Environment of the House Transportation and Infrastructure Committee*, 104th Cong., 1st Sess. (1995) (prepared testimony of Mary P. Morningstar, Assistant General Counsel, Environmental Law, Lockheed Martin Corporation).

2. Market Based Incentives

Though some form of command-and-control regulation is unavoidable,⁵⁶ the focus shift needed to make further gains will involve "how we live on the land and on the planet . . . how we run an industrial society, and at [sic] how to make the kinds of changes in the structure of this society, in the organization of our economy and our culture, and in our personal habits..."⁵⁷

a. Details

Two types of approaches have been proposed to supplement or replace the command and control structure: reflexive environmental law and market-based incentives.⁵⁸ Command and control systems are incentive systems as well,⁵⁹ however, command and control causes actions to happen (incentivize) through the use of fear.⁶⁰ The business community sees this as a "negative incentive." Market based incentives are usually "positive incentives." Negative incentives, by preying on the fears of the regulated, inhibit risk-taking and innovation. Positive incentives allow for the taking of risks which, in turn, brings about innovative break-throughs. This article centers on "positive incentives."⁶¹

Reflexive environmental law is the theory developed by Professor Erich Orts, in his article of the same name, to explain the environmental controls brought about by requiring the polluter to evaluate itself, track its pollution, and/or publicly announce its liability for the pollution caused by the polluter.⁶² Generally, the requirement of self-evaluation and public

⁵⁶ Breger, *supra* note 17, at 479.

⁵⁷ Bruce Babbitt, *The Future Environmental Agenda for the United States*, 64 U. COLO. L. REV. 513, 514 (1993).

⁵⁸ Orts, *supra* note 4.

⁵⁹ Breger, *supra* note 17, at 474.

⁶⁰ David R. Karp & Clark L. Gaulding, *Motivational Underpinnings of Command-and-Control, Market-Based, and Voluntarist Environmental Policies*, 48 HUMAN RELATIONS 439 (1995).

⁶¹ The use of the "positive" and "negative" terminology here is not universally accepted. See note 483 *infra*.

⁶² Orts, *supra* note 4, at 1231-1232. ["Reflexive law focuses on influencing the 'self-

notice is enough, in itself, to incentivize the polluter to stop polluting.⁶³ Since overt incentives are not needed with reflexive environmental law, discussion of this option is not needed to understand other market-based incentives.

In the late 1970s, a number of commentators began to argue for the use of a market-based system of environmental controls.⁶⁴ Their central thesis was that the government could achieve environmental gains at much lower social costs with a more market-oriented system of tradable rights, taxes, and other incentives for pollution prevention.⁶⁵ Such a market-oriented system would incentivize innovation in cleaner technology.⁶⁶ This idea of a

referential' capacities of the social institutions subject to regulation. Reflexive law gets its name from being self-referential in two respects. First, it is a self-critical legal theory. A theory of reflexive law emphasizes the limits of law in the face of complexity. The complexity of society and its problems diminishes the capacity of law to direct social change in a specified or detailed manner. Second, a theory of reflexive law proposes an alternative approach to law reform. It focuses on enhancing self-referential capacities of social systems and institutions outside the legal system, rather than direct intervention of the legal system itself through agencies, highly detailed statutes, or delegation of great power to courts. * * * Market-based incentives rest on the assumption that free markets operate efficiently only when participants are fully informed. Asymmetric information causes market failure by undermining rational choice. With the "greening" of America, environmental issues are in the forefront of most political, economic, and legal discussions. When the frequency and extent of individual firms' polluting activities are publicly known, market forces will pressure polluters to attain an equilibrium that balances a sustainable natural environment with comfortable economic progress in order to capture the investment dollars of green investors. Thus, complete disclosure of environmental liability will provide a fully informed public, enhancing the effect of market-based incentives. To date, such disclosures have been provided by specific environmental statutes, the EPA's disclosure policy, and financial disclosures of publicly-traded firms." *Id.*

⁶³ *Id.*

⁶⁴ David A. Dana, *Review Essay: Setting Environmental Priorities - The Promise of a Bureaucratic Solution: "Breaking The Vicious Circle: Toward Effective Risk Regulation" By Stephen Breyer*, 74 B. U. L. REV. 365, 366 (1994). ["A major change from total reliance upon classical standard setting to increased reliance upon incentive mechanisms is probably desirable when dealing with a complex spillover problem such as pollution."] *Id.* quoting Breyer, at 284.

⁶⁵ Dana *Id.* at 367.

⁶⁶ *Id.*

market-oriented system of incentives has received widespread acceptance.⁶⁷ It offers a seemingly unrealistic argument: "reform without pain."⁶⁸ It promises to increase the level of environmental protection from the current command and control system with the added benefits of cost savings and greater technological innovation.⁶⁹ Examples of market-oriented incentives already adopted include trading of "acid rain" pollution rights authorized in the 1990 Clean Air Act (CAA) Amendments, new pollution sources offset through obtaining reductions in existing sources under the CAA's non-attainment and Prevention of Significant Deterioration (PSD) provisions,⁷⁰ tax credits and pollution taxes,⁷¹ and the trading of rights in ozone depleting substances under the CAA.⁷² All of the incentives detailed in the second part of this discussion are market-based incentives.

b. Benefits

There are many perceived benefits of market based incentives and systems. For one thing, it motivates the business community to take some of the responsibility for the environment off the back of the government.⁷³ Most businesses believe that investing in environmentally sound products and practices is good business over the long run⁷⁴ and often times it is only the business community that can organize the necessary technology and

⁶⁷ *Id.*

⁶⁸ *Id.* at 368.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ "Libertarian, free-market advocates would argue that tax policies are hardly 'market-based' economic incentives. Of course, none of the economic incentive approaches mentioned qualify as "pure" market solutions in libertarian utopia. These methods depend, at least in part, on government commands for attainment to encourage trading pollution rights or control emissions within the bubble area. Nevertheless, the hybrid envisioned by combining command and control with market-based economic incentives permits harnessing market forces to achieve regulatory goals, so it seems appropriate to claim these as examples of market-based economic incentives." Bagby, *supra* note 2, at 237.

⁷² *Id.*

⁷³ Orts, *supra* note 4, at 1229.

⁷⁴ *Id.*

financial resources to bring about the dramatic changes needed to protect the environment.⁷⁵

"Companies that are trying to be leaders on a new path to a sustainable future merit our encouragement and support, just as the inevitable backsliders deserve a vigorous shove onto the trail."⁷⁶

Second, market-based incentives do not dictate the solution to the environmental problem.⁷⁷ By not dictating a solution, innovation is incentivized. Environmental achievements can be made through new processes, conservation, changes in raw materials, end-of-pipe controls, or any other change that effects the same bottom line goal.⁷⁸

Market-based incentives reduce the role of government in several ways.⁷⁹ For one, they reduce the central planning role inherent in the command and control system.⁸⁰ Though government monitoring is still necessary to achieve a workable market-based system, the monitoring would be reduced from present levels.⁸¹

Reducing the overall cost to society of environmental compliance is another perceived benefit of market-based incentives.⁸² Supposedly a market-driven system would reduce industry's compliance costs and at the same time reduce the government's enforcement costs.⁸³

Using a decentralized market system counters one of the pitfalls of the command and control system - informational overload.⁸⁴ This type of market system can control thousands

⁷⁵ *Id.*

⁷⁶ *Id.* quoting James G. Speth in the Foreward to *BEYOND COMPLIANCE: A NEW INDUSTRY VIEW OF THE ENVIRONMENT* at ix, x (Bruce Smart ed., 1992).

⁷⁷ Breger, *supra* note 17, at 469.

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.* ["Monitoring and enforcement is a key element in both regulatory and economic incentive systems; without it there will be cheating and environmental degradation."] *Id.*

⁸² Bruce A. Ackerman & Richard B. Stewart, *Comment - Reforming Environmental Law*, 37 *Stan. L. Rev.* 1333, 1342-1347 (1985), as cited in Dana, *supra* note 64, at 367.

⁸³ *Id.*

⁸⁴ Breger, *supra* note 17, at 476.

of small source pollution emitters without the information and workload overload the downsizing government bureaucracy will have with the current system.⁸⁵

Another advantage to market based incentives is really a political advantage.⁸⁶ Market based incentives provide a relatively more neutral principle that can be a basis for political compromise.⁸⁷ This is one area where the business interests and the environmental interests can come to an accommodation.

Part of the reason market-based incentives are seen to be more effective than command and control systems is because the incentives focus a positive or proactive light on the environmental problem.⁸⁸ This contrasts sharply with the punitive nature of most command-and-control laws and regulations.⁸⁹ It is basic human psychology that most people want to feel positive about their work or business.⁹⁰ Add to that positive feeling, the ability to make money or enhance a company's profit potential and the result is a win-win situation for both business and the environment.⁹¹

Finally, and most importantly for our purposes, a market-oriented system, gives industry an ongoing incentive to develop environmentally enhancing technology.⁹² As stated above, a mind shift is needed to move away from clean-up and stop pollution before it starts.⁹³ New innovative technology is central to such a shift.⁹⁴ One option is to substitute

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.* at 477.

⁸⁸ Orts, *supra* note 4, at 1285.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ Karp & Gaulding, *supra* note 60.

⁹² Dana, *supra* note 64, at 367; Breger, *supra* note 17, at 468.

⁹³ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 25.

⁹⁴ *Id.* at 1.

inherently less polluting technologies for those that are more polluting.⁹⁵ Incentivizing such technologies is the most realistic way to dramatically improve our environment.⁹⁶

Market-oriented incentives have achieved widespread acceptance.⁹⁷ Both the Republican Bush Administration and the Democratic Clinton Administration have endorsed these type of incentives.⁹⁸ Real examples of market-oriented systems are in use now.⁹⁹ "It is now assumed that market-oriented solutions to any given environmental problem at least should be considered, if not necessarily adopted."¹⁰⁰

c. Problems with Market Based Incentives

There has been little criticism of market-incentives as a general theory. Some have argued that it is immoral to establish private rights in natural resources or pollution.¹⁰¹ They further argue that it is immoral to license pollution.¹⁰² However, the reality is that society

⁹⁵ Breger, *supra* note 17, at 476.

⁹⁶ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45.

⁹⁷ Dana, *supra* note 64, at 367.

⁹⁸ *Id.*

⁹⁹ Examples of market-oriented incentives, already adopted, include trading of "acid rain" pollution rights authorized in the 1990 Clean Air Act (CAA) Amendments, new pollution sources offset through obtaining reductions in existing sources under the CAA's non-attainment and Prevention of Significant Deterioration (PSD) provisions, tax credits and pollution taxes, and the trading of rights in ozone depleting substances under the CAA. *Id.* at 366.

¹⁰⁰ *Id.* at 367.

¹⁰¹ Breger, *supra* note 17, at 466. ["I am sure that there are costs as well as benefits associated with these alternatives. However, one obstacle I hope we have already overcome is the view that it is immoral to establish private rights in environmental resources or environmental pollution. As W. J. Baumol and W. E. Oates stated in their book *Economics, Environmental Policy and the Quality of Life*:

Society has been giving away free too many of its environmental resources too long. It is not scandalous to decide that everything has its price; the real scandal lies in setting that price at zero or at some token level that invites us all to destroy these resources . . . Unless we recognize the legitimate role of price incentives for the control of pollution, we may end up with our sense of morality intact but our environment the worse for continued abuse."]

W. J. BAUMOL & W. E. OATES, *ECONOMICS, ENVIRONMENTAL POLICY AND THE QUALITY OF LIFE* 245 (1979), as cited in Breger, *supra* note 17, at 466.

¹⁰² Breger, *supra* note 17, at 470.

has given away for free too many natural resources.¹⁰³ So too, our present command and control system licenses polluters for free.¹⁰⁴ Therefore, the choice here is between spoiling the environment for free (and thus encouraging the spoiling) or charging for spoiling (thus discouraging the spoiling). The reality is that this is not a morality question, but a survival question.¹⁰⁵ The important point is to find the answers that do the job.¹⁰⁶

A second problem is that market-based systems, especially those reflexive in nature, are unpredictable in the quantity of their results. This is especially distasteful for those who cherish "control."¹⁰⁷ In most cases, though, it is more important that real results are being achieved than to enable bureaucrats to predict the results.

B. Basis for Government Action

1. Legislative Pronouncements of Need

Though it is clear that market-based incentives offer many advantages to the government, the single manager, director, or commander in the field still must wrestle with the question of whether Congress should implement these market-based incentives to encourage government contractor innovation or whether the single manager, director or commander in the field is presently authorized to devise their own system of incentives. In reality both should be done and in fact, there presently is authorization from Congress and the President to do just that.

¹⁰³ *Id.* at 466 [Natural resources have always been regarded as belonging to the property they were attached to. Common resources like water and air were commonly available for the taking. Water gradually came to cost something but even now the cost of supplying water is often heavily subsidized by the government. Since the 1970's, the government has issued use permits at minimal cost that permit the use of water for pollution purposes.]

¹⁰⁴ *Id.* at 470.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ Orts, *supra* note 4, at 1267-1268.

Ever since 1969, the National Environmental Policy Act (NEPA) has mandated a "national policy for the environment," obligating the federal government to take all necessary measures to protect the environment.¹⁰⁸

The Congress ... declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain the conditions under which [humanity] and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.¹⁰⁹

NEPA goes on to list the goals of the government:

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

¹⁰⁸ 42 U.S.C. § 4331(a) (1988).

¹⁰⁹ *Id.*

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.¹¹⁰

NEPA directed that all policies, regulations, and public laws of the United States be harmonized with the above goals and that all the federal agencies must, to the fullest extent possible, "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment."¹¹¹ The legislative history highlighted this language as "a separate and new obligation on all federal agencies unless expressly prohibited by existing law applicable to the agency or unless the agency's full compliance would be impossible under other applicable laws."¹¹²

Consideration by Congress of legislation to spur environmental innovation is not unrealistic as they did consider such legislation in 1994. The Environmental Technologies Act of 1994, House Report No. 103-536, June 8, 1994 was such legislation.¹¹³ This act, which passed through committee, stated its goals as:

- (1) to improve coordination and integration of environmental technology research and development performed by and across Federal agencies;
- (2) to assist and catalyze efforts of private industry, universities, nonprofit research centers, and Federal laboratories in the research, development, and demonstration of environmental technologies and, in the process, to promote the competitiveness of United States companies;
- (3) to facilitate the dissemination of information regarding innovations in environmental technologies;

¹¹⁰ 42 U.S.C. § 4331(b) (1988).

¹¹¹ 42 U.S.C. § 4332 (1988).

¹¹² CONF. REP. NO. 765, 91st Cong., 1st Sess. (1969), *reprinted in* 1969 U.S.C.C.A.N. 2767, 2770. *C.f.* [Most of NEPA's sweeping language is considered "noble, vague, aspirational, and unenforceable."] Orts, *supra* note 4, at 1273.

¹¹³ H.R. REP. NO. 536, *supra* note 50. A similar version was passed by the Senate.

- (4) to promote the development of technical performance measurements of environmentally sound products; and
- (5) to direct the study of policy changes that will provide for the more efficient research, development, and demonstration of environmental technologies.¹¹⁴

The "Findings" included in the act emphasized the need for environmental innovation that would enhance both the environment and the economy.¹¹⁵ It also found that the Federal Government must take a more strident position in moving the business community toward such innovation.¹¹⁶

This bill explained that there are certain disincentives already at work in the economy that must be overcome.¹¹⁷ Included in these disincentives are the bureaucratic delays, the rigid and inflexible regulatory system and the possibility of regulatory changes that are

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.* The entire findings are:

SEC. 102. FINDINGS.

The Congress finds the following:

(1) Promoting a sound economy and maintaining a healthy environment are among the urgent public policy challenges of the United States.

(2) The research, development, and demonstration of environmental technologies will enhance the economic standing of the United States and global environmental security.

(3) Although better designs for products and processes offer new opportunities for substantially improved environmental performance in growing domestic and international markets, current government regulations and market barriers do not allow these opportunities to be fully exploited.

(4) Although the Federal Government, research institutes, universities, and industries are conducting substantial basic environmental research and development, environmental concerns must become a more pervasive and central dimension of technology research and development.

(5) The coordination of Federal, State, and local activities for the research, development, and demonstration of environmental technologies will greatly enhance the effectiveness of environmental policies of the United States. *Id.*

¹¹⁷ *Id.*

discussed above.¹¹⁸ Another disincentive noted was a lack of investment capital.¹¹⁹ Companies willing to take risks with innovative new technologies are often avoided by bankers and lenders.¹²⁰ Further, these same banks often do not understand innovative environmental projects and do not view them as cash flow generators.¹²¹ Lack of investment capital is a good reason why companies are anxious for financial incentives from the government.

This bill also noted the fact that there is a barrier of mistrust between industry and government on environmental issues.¹²² Traditionally, the role between the government and industry has been antagonistic, with the government seeing industry's only concern being on making a profit - even at the expense of the environment - and industry seeing government as controlled by rabid environmentalists who want industry to pay for everything.¹²³ The assumption is that environmental and economic interests cannot both be pursued simultaneously.¹²⁴ That is not true. The key to breaching this barrier of mistrust is the incentivizing of innovative technology that allows both interests to be sustained.¹²⁵

2. Executive Pronouncements of Need

In addition to legislative authority, there is Presidential authority to incentivize environmental innovation.¹²⁶ President Nixon ordered the implementation of the pervasive federal policy found in NEPA through an Executive Order.¹²⁷ More recently, both the

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ *Id.*; *The Environmental Technologies Act of 1994: Hearings on H.R. 3870 Before the Subcommittee on Technology, Environment, and Aviation of the House Committee on Science, Space, and Technology Committee*, 103rd Cong., 2nd Sess. (1994) (testimony of Dr. Robert Bringer, Vice President, 3M).

¹²⁶ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45.

¹²⁷ Exec. Order No. 11,514, 3 C.F.R. 104 (1970), *reprinted as amended in* 42 U.S.C. § 4321

Republican Bush Administration and the Democratic Clinton Administration, have pursued projects to recast existing regulatory programs in market-oriented terms.¹²⁸ President Clinton charged Congress to look at environmental innovation. "As we protect our environment, we must invest in the environmental technologies of the future which will create jobs."¹²⁹ The Honorable John H. Gibbons, Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy testified to Congress that one of the two goals of the Administration regarding technology policy was to encourage the development of new technologies.¹³⁰ He specifically referred to the use of the federal government's purchasing power to drive the development of new environmental technologies and providing technical and cost-sharing assistance to businesses.¹³¹

The Environmental Protection Agency (EPA) has made it clear that they favor technical innovation and corporate involvement.¹³² They want "'Compan[ies] with an Attitude' -- and the right attitude at that."¹³³ They have embarked on several new programs to reach out to corporate America and incentivize innovation and proactive environmental efforts, including the Environmental Leadership Program, the XL Program, the Common Sense Initiative, and EPA's Technology Innovation Strategy.¹³⁴ The EPA says they will increasingly focus their programs on pollution prevention rather than end-of-pipe pollution control.¹³⁵ They intend to encourage cooperative efforts with universities, industry, and

(1988).

¹²⁸ Dana, *supra* note 64, at 367.

¹²⁹ *FY95 Defense Appropriations: Hearings Before the Subcommittee on Defense of the House Appropriations Committee*, 103rd Cong., 2nd Sess. (1994) (testimony of Sherri Wasserman Goodman, Deputy Under Secretary of Defense (Environmental Security)).

¹³⁰ H.R. REP. NO. 536, *supra* note 50.

¹³¹ *Id.*

¹³² Perkins Coie & David Dabroski, *Government Policies to Consider When Developing an Environmental Compliance Management Program, Part 2*, WASHINGTON ENVIRONMENTAL COMPLIANCE UPDATE, December, 1994.

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *The Environmental Technologies Act of 1994: Hearings on H.R. 3870 Before the*

other Federal agencies to stimulate pollution prevention technology development.¹³⁶ For example, the Environmental Leadership Program was established to "encourage and publicly recognize environmental leadership and promote pollution prevention in the manufacturing section."¹³⁷ The EPA's Technology Innovation Strategy is somewhat different than the other programs as it is designed to set internal EPA goals.¹³⁸ These goals are to:

- 1) adapt EPA's policy, regulatory and compliance framework to promote innovation;
- 2) strengthen the capacity of technology developers and users to succeed in environmental technology innovation;
- 3) strategically invest in the development and commercialization of promising new technologies; and
- 4) accelerate the diffusion of innovative technologies at home and abroad.¹³⁹

Other agencies have expressed direction, goals, and policies relating to incentivizing innovation, as well. The Department of Commerce, including the National Oceanic and Atmospheric Administration (NOAA), has already started a number of research and monitoring activities, particularly those in NOAA and NIST,¹⁴⁰ which support environmental technology development.¹⁴¹ The National Science Foundation and the Office

Subcommittee on Technology, Environment, and Aviation of the House Committee on Science, Space, and Technology Committee, 103rd Cong., 2nd Sess. (1994) (testimony of Paul G. Keough, U.S. Environmental Protection Agency's Acting Regional Administrator for Region 1).

¹³⁶ *Id.* (testimony of Mr. Robert Sussman, Deputy Administrator, Environmental Protection Agency).

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ National Institute of Science and Technology.

¹⁴¹ *The Environmental Technologies Act of 1994: Hearings on H.R. 3870 Before the Subcommittee on Technology, Environment, and Aviation of the House Committee on Science, Space, and Technology Committee, 103rd Cong., 2nd Sess. (1994) (testimony of Dr. Kathryn Sullivan, Chief Scientist for NOAA).*

of Technology Assessment, U.S. Congress, both testified to Congress as to support of their agencies and other Federal agencies to incentivizing environmental technology.¹⁴²

3. DOD Pronouncements

One of the most strident agencies in announcing its support for the idea of market-based initiatives and environmental technology has been the Department of Defense (DOD). DOD recognized the linkage between environmental problems and all other aspects of their national security mission.¹⁴³ For one thing, DOD spends large sums of money cleaning up contaminated sites or disposing of wastes.¹⁴⁴ Such money could have been spent on its people or more advanced weapon systems.¹⁴⁵ Further, lack of attention to environmental compliance can shut down key training ranges or facilities.¹⁴⁶ DOD recognizes that accelerating new environmental technology will result in less costs overall, more creative conservation initiatives, and the prevention of more pollution at the source.¹⁴⁷ The Secretary of Defense has noted that "the values supported by a healthy environment -- life, liberty, freedom from fear and want -- are the same ones we stand ready to fight and die for."¹⁴⁸

DOD's major environmental goals include "prevent pollution at the source whenever possible" and "promote development of dual-use environmental technologies."¹⁴⁹ Pollution Prevention is considered a "must do" for DOD.¹⁵⁰ "DOD does not have enough shovels, no

¹⁴² *The Environmental Technologies Act of 1994: Hearings on H.R. 3870 Before the Subcommittee on Technology, Environment, and Aviation of the House Committee on Science, Space, and Technology Committee*, 103rd Cong., 2nd Sess. (1994) (testimony of Dr. Joe Bordogna, Assistant Director for Engineering, National Science Foundation & Mr. Wendell Fletcher, Office of Technology Assessment).

¹⁴³ Goodman, *supra* note 129.

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* For example, the Army's inattention in the mid- 80s to an endangered species problem caused disruption in special forces training activities at Fort Bragg.

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

matter how modern these shovels become, to keep digging up the hazardous wastes and other pollutants industrial operations produce."¹⁵¹ The central method DOD plans to use to meet their pollution prevention goals is through the development of innovative technologies.¹⁵²

Their strategy is to:

- match technology investments to real environmental needs;
- identify technologies which provide the highest payback;
- engage in partnerships to stimulate innovative dual use technology development; and
- expedite the use and commercialization of technologies.¹⁵³

Critical to this strategy is the DOD plan to use their acquisition process to influence the growth of environmental technology.¹⁵⁴ For one thing, they are revising military specifications and standards with an eye towards reducing the requirements for the use of hazardous materials.¹⁵⁵ They also plan to work with industry to design and engineer as much hazardous material out of the early stages of the weapons systems acquisition process where decisions about material use are made.¹⁵⁶ 10 U.S.C.A. § 2902 (1996) provides for a standing council of top DOD, DOE, and NASA officials that are required to

- (4) provide for the identification and support of programs of basic and applied research, development, and demonstration in technologies useful--
 - (A) to facilitate environmental compliance, remediation, and restoration activities of the Department of Defense and at Department of Energy defense facilities;

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

(B) to minimize waste generation, including reduction at the source, by such departments; or

(C) to substitute use of nonhazardous, nontoxic, nonpolluting, and other environmentally sound materials and substances for use of hazardous, toxic, and polluting materials and substances by such departments;

(5) provide for the identification and support of research, development, and application of other technologies developed for national defense purposes which not only are directly useful for programs, projects, and activities of such departments, but also have useful applications for solutions to such national and international environmental problems as climate change and ozone depletion;

(6) provide for the Secretary of Defense, the Secretary of Energy, and the Administrator of the Environmental Protection Agency, in cooperation with other Federal and State agencies, as appropriate, to conduct joint research, development, and demonstration projects relating to innovative technologies, management practices, and other approaches for purposes of--

(A) preventing pollution from all sources;

(B) minimizing hazardous and solid waste, including recycling; and

(C) treating hazardous and solid waste, including the use of thermal, chemical, and biological treatment technologies;

(7) encourage transfer of technologies referred to in clauses (2) through (6) to the private sector under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. § 3701 et seq.) and other applicable laws;

(8) provide for the identification of, and planning for the demonstration and use of, existing environmentally sound, energy-efficient technologies

developed by the private sector that could be used directly by the Department of Defense;¹⁵⁷

In general, the insertion of environmental concerns into the procurement process is a high priority.¹⁵⁸ Pollution prevention must be part of all phases of a weapon system life cycle especially source selection.¹⁵⁹

There are a number of examples of DOD already moving out in this area.¹⁶⁰

-- DOD is trying to adopt an Aerospace Industries Association industry standard into DOD acquisition of weapon systems.¹⁶¹ The standard pushes the elimination or reduction of hazardous materials early in the design stage.¹⁶²

-- DOD is trying to set up an agreement with its industrial base for scientific studies relating to energy-efficient and environmentally-friendly processes.¹⁶³

-- In conjunction with the National Defense Center for Environmental Excellence (NDCELL), the DOD is testing and/or demonstrating several new pollution prevention technologies.¹⁶⁴

-- DOD instituted the Environmental Security Technology Certification (ESTC) Program to "transition mature environmental research and development projects to the demonstration and validation phase, so promising technologies can get regulatory certification and be available faster for field use."¹⁶⁵

¹⁵⁷ 10 U.S.C.A. § 2902 (1996)

¹⁵⁸ Goodman, *supra* note 129.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

-- DOD is partnering with other agencies to demonstrate innovative technologies that will lead to more rapid cleanup of the environment at less cost.¹⁶⁶

-- The Department spent more than \$152 million to support basic and applied research and development of environmental technologies through the Strategic Environmental Research and Development Program (SERDP).¹⁶⁷

-- DOD requested \$628 million for environmental technology programs in FY 92.¹⁶⁸

What is clear from these examples and from the statements of senior officials is that the enhancement of environmental technology is a central goal of the United States Government and all of its agencies, especially DOD.

C. Problems Incentivizing Innovation

1. Replacement for Current System

Some of the criticism leveled against both incentive or market-based systems and environmental technology is that it is not a viable replacement in toto for the command and control system in place today.¹⁶⁹ This is true. A command and control system provides a needed and unavoidable baseline in the control of environmental problems.¹⁷⁰ The many different types of environmental controls have different effects and some types are better for some situations than other types.¹⁷¹ The best answer is probably found in a combination or "package-deal" of incentives and present regulations.¹⁷² Incentivizing innovation is especially effective for beyond-compliance efforts.¹⁷³

¹⁶⁶ *Id.*

¹⁶⁷ *Id.* These are FY 1994 figures.

¹⁶⁸ *Id.*

¹⁶⁹ Orts, *supra* note 4, at 1284.

¹⁷⁰ Wallace, *supra* note 3, at 1093.

¹⁷¹ Breger, *supra* note 17, at 474.

¹⁷² *Id.* at 479.

¹⁷³ See discussion *infra* part I.D.

2. Start Up Costs

One of the problems with the development of new technology is the inherent capital costs and other start-up costs that many businesses are reluctant to shoulder alone.¹⁷⁴ This is especially true for environmental technology where the results may not economically benefit the company at all or only in the long term.¹⁷⁵ The problem of high capital costs are aggravated with a general unavailability of financing for this type of innovation.¹⁷⁶ Due to the unsophistication of banks and lenders on environmental technology issues, small and medium-sized firms find it difficult to get financing.¹⁷⁷ Banks and lenders do understand that many of these technologies are high risk and therefore the best a firm can get is a loan with a higher interest rate and a shorter term.¹⁷⁸ This is one of the reasons why the government must look to incentives to insure effective and widespread participation.¹⁷⁹ Monetary incentives of any kind are the most effective in overcoming this hurdle.¹⁸⁰

3. Loss of Goal

The business community is leery of voluntary cooperative programs with government agencies due to horror stories of companies entering into such programs and investing their profits, only to find a lack of governmental or agency commitment to the joint goals.¹⁸¹ They cite a loss of focus by the agency in the goal, overbureaucratization of the process, or no real commitment to the goal in the first place.¹⁸² This last complaint is heard when the

¹⁷⁴ Gollin, *supra* note 1, at 10171.

¹⁷⁵ *Id.*

¹⁷⁶ H.R. REP. NO. 536, *supra* note 50.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ Gollin, *supra* note 1.

¹⁸⁰ *Id.*

¹⁸¹ Orts, *supra* note 4, at 1286.

¹⁸² *Id.* One company noted that, "Regrettably, our experience with EPA and other regulatory agencies with voluntary joint efforts has not always been positive or productive. Too often, we have witnessed such programs used for special agendas, with regulatory agencies giving little or no attention to technological feasibilities [sic] ... [and] where the process itself so quickly overwhelms the substance of the program that one is no longer sure

government agency is only trying to score political points.¹⁸³ It can also be a problem for the government when companies are only trying to appear "green" in public relations campaigns.¹⁸⁴ This problem of lack of commitment can be overcome only through proven agency commitment to the environment and sincere negotiations with companies.

Related to this is the continual distrust of a regulated industry of its regulator or the distrust of industry of environmentalists.¹⁸⁵ Many still feel that environmental interests and economic interests must be antagonistic.¹⁸⁶ Certainly the idea of government and industry partnering together to bring about a win-win situation for both was unheard of in the environmental arena.¹⁸⁷

4. Changing the Mission

Government contractors will often be strongly bound up in the sense of mission imparted from the agency they are contracting with.¹⁸⁸ This sense of mission filters down to the employees and is a strong force in achieving company goals.¹⁸⁹ Companies may find it difficult to inculcate environmental compliance as equivalent in importance to production priorities in the minds of line employees.¹⁹⁰ Agencies can attempt to mitigate this problem through how the contract is presented to the company.¹⁹¹ If the company is tasked only to build an aircraft to support a war effort they will find it hard to say that the mission is environmental innovation. However, if the company is tasked with building an

of the program's original goals." *Id.* (quoting letter from Phelps Dodge Corp.).

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ H.R. REP. NO. 536, *supra* note 50, at 23.

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

¹⁸⁸ Thomas R. Bartman, *The Environmental Criminal Liability Concerns of GOCOs: Taking a Proactive Stance Toward Compliance*, FED. CON. REP. 379, 382, Mar. 21, 1994.

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

¹⁹¹ This is not only a contract formation problem, but a contract negotiation and administration problem. What is said to the contractor beyond the "four corners" of the contract may be as crucial as the contract itself.

environmentally friendly aircraft through innovative pollution minimizing production techniques, the employees will see the dual mission - war fighting capability and environmental innovation. Of course, this view of mission will only survive if senior agency officials constantly push it - as they push the war mission of the aircraft.¹⁹²

The company also must take a role. Passing on performance incentives earned by the company to the employees is one example of how to move employees toward the goal.¹⁹³ A performance system of bonuses, promotions, or salary increases based on environmentally friendly ideas or suggestions provides a potentially important incentive for employee efforts and demonstrates company recognition of and commitment to environmental innovation.¹⁹⁴ Employee incentives for environmental innovation should hold equal status to incentive programs based on profits.¹⁹⁵

5. Fear of Risks

Sometimes the fear of risking something becomes more powerful than the actual danger. This is true anytime you try to change the status quo. From the contractors side there is a fear of criminal and civil penalties that could bankrupt the company, or worse, hold officers liable.¹⁹⁶ The fact is that there have been few instances of criminal prosecution and good faith and honest dealing do go a long way in the avoidance of environmental penalties. From the government's side the fear of recriminations insures that workers will keep their

¹⁹² Environmental innovation and decreased pollution are essential needs of the Government and must be presented as such. *See discussion supra*. The problem lies with the perception of some government personnel that do not see environmental limits as absolute limits (like costs, technological feasibilities, etc.).

¹⁹³ *See e.g. DOE, Westinghouse Revamp Hanford Pact*, INSIDE ENERGY WITH FED. LANDS, Jan. 30, 1995, at 1.

¹⁹⁴ Bartman, *supra* note 188, at 384-385.

¹⁹⁵ *Id.*

¹⁹⁶ *Report of the Acquisition Reform Working Group: Hearings Before the Subcommittee on Acquisition and Technology of the Senate Armed Services Committee*, 104th Cong., 1st Sess. (1995) (prepared testimony of Peter DeMayo, Vice-President, Contract Policy, Lockheed Martin Corporation).

bureaucratic mindset. A culture of second-guessing honest judgment calls creates fear on both sides of the fence.¹⁹⁷ This fear must be fought and the culture must change.¹⁹⁸

6. Limit the Bureaucracy

To be genuinely effective, the incentive system must minimize the bureaucracy (EPA, corporate, or both) needed for oversight.¹⁹⁹ Invariably there will be a bureaucracy to administer any system, however, minimizing this bureaucracy will usually allow the system to work smoother.²⁰⁰ There have been a significant amount of academic criticism of implemented systems in the past for the EPA imposing so many bureaucratic requirements and safeguards.²⁰¹ This was thought to damper the effectiveness of those systems.²⁰²

7. Good Information Systems

A good information system is considered a crucial element of any incentive system.²⁰³ Only with good data can such systems be run fairly and evenly between participants. For example, the acid rain program works because of the finite number of large sources; the government's extensive data base on electric utilities, including who they are, who owns them, their throughput of raw materials; and the fact that the pollution can be effectively measured as it comes out the stack.²⁰⁴ New innovative measuring processes are now available and more are needed.²⁰⁵

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ Breger, *supra* note 17, at 478.

²⁰⁰ *Id.*

²⁰¹ *Id.* The criticism surrounds the panoply of rules surrounding the trading of credits, including registration requirements and trading centers. See generally REITZE, *supra* note 32, Chapter 15.

²⁰² *Id.*

²⁰³ Breger, *supra* note 17, at 484.

²⁰⁴ *Id.*

²⁰⁵ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 135. Measuring processes like life cycle measurements are available now, but for other technologies using improved tools (sensors, databases, analytical packages, etc.), software, modeling, and sampling are needed. *Id.*

8. Incentive Effectiveness

Deciding the appropriate incentive to achieve the maximum pollution prevention or clean-up for the minimal cost is crucial to good environmental management. The reality is that different types of incentives have different effects and some are better for some situations than others. This is just as true for command and control regulations and laws. Market incentives are not always the best way to effect needed changes.²⁰⁶ Many command and control type laws and regulations have effected great environmental changes in remarkable short periods of time.²⁰⁷

Finding the appropriate incentive to achieve maximum pollution prevention or clean-up for minimal cost depends on the "linkage" between the incentive to the pollution problem, as well as the administrative cost attributable to the incentive and pollution problem.²⁰⁸ The efficiency of the incentive depends on the degree of linkage after the additional cost of implementation and administration is taken into account.²⁰⁹

The value of linkage depends on five factors: 1) Complexity of the pollution problem; 2) Importance of quantities versus quality; 3) Technical ability available; 4) Point in the process available to be taxed or otherwise incentivized; and 5) Location of the pollution versus the concentration of the pollution.²¹⁰ These linkage factors are fact specific to all market based incentives, therefore in a particular instance the linkage of a tax incentive, for example, to certain behavior may be very high with low administrative costs. In such a case, this type of incentive can be very effective. The question of what incentive is the best for each pollution situation is extremely critical to effecting good pollution restraints

²⁰⁶ Orts, *supra* note 4, at 1245.

²⁰⁷ Breger, *supra* note 17, at 463.

²⁰⁸ ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, TAXATION AND THE ENVIRONMENT: COMPLEMENTARY POLICIES 49 (1994) [hereinafter OECD]. This idea can be expressed as a formula " $i = l - c$," where i represents the effectiveness of a particular incentive plan, l represents linkage, and c represents the administrative cost involved.

²⁰⁹ *Id.* at 49-51.

²¹⁰ *Id.* at 49-57.

and reforms, but it can only be determined by the policy-maker who understands the problem, the particular facts involved, and the behavior that needs to change. The greater the options, the greater the likelihood that an incentive package can be devised that is truly effective.

Empirical studies of the market approaches tried so far have found that they work best with a single strong regulator like EPA, one principal output that can be measured confidently, and a group of traders that are knowledgeable about their business and the other traders.²¹¹

D. Environmental Innovation Beyond-Compliance

The goal of all the incentives discussed above is environmental innovation beyond-compliance. "Beyond-compliance" is a change in products or processes that will reduce pollution emissions below levels presently required by law.²¹²

The reduction of pollution emissions below levels presently required by law or presently achievable is a tricky standard to measure because of media shifting. This is a common problem in environmental law. If the government requires water to be cleaner, a waste treatment plant is built that turns the dirty water into clean water and sludge. If there is too much garbage going into too little landfills capacity, an incinerator is built which turns the garbage into silt and airborne particulates. In both these cases a particular media - air, water, or land - was benefited at the expense of increased pollution of the other media. Less water pollution means more land pollution. Less land pollution means more hazardous, though less volume, land pollution and air pollution. The goal is to start looking holistically at the problem, to ensure an overall reduction.²¹³ We need environmental innovation not

²¹¹ Orts, *supra* note 4, at 1246.

²¹² Bartman, *supra* note 188, at 384. Innovation to make compliance with present legal standards easier or cheaper is an admirable goal for the business community but it does nothing to advance the governmental and societal goal of an improved environment and it is outside the scope of this paper.

²¹³ Orts, *supra* note 4, at 1332.

only in what products to make and services to provide, but also in the manufacturing processes we use and in our natural resource acquisition policies.²¹⁴

Measuring reductions effectively requires a review of the life cycle of the product or process.²¹⁵ Life cycle analysis in the environmental context is critical to reducing pollution and several organizations have attempted to standardize the procedures so as to obtain a level playing field for the use of performance incentives.²¹⁶ Often it is the initial design of a product or process that defines the environmental impact of that product or process, including maintenance and operations, for the entire period of ownership.²¹⁷

There are three types of innovation that would achieve the environmental gains needed: Pollution Prevention, Reflexive Programs, and Environmental Technology.

1. Pollution Prevention

Pollution prevention is the changing of processes or products so as to eliminate the use of polluting parts or functions. For example, aluminum alloys, used in many weapon systems, used to be pre-treated with a chromate conversion coating prior to painting.²¹⁸ The Army, using life-cycle analysis, was able to develop a process that led to the elimination of the chromate conversion coating entirely.²¹⁹ Preventive measures reduce risks to human health and the environment, reduce costs and future liabilities, reduce the use of raw materials, and can be critical to America's competitiveness in a global economy.²²⁰

²¹⁴ *Id.*

²¹⁵ *Id.* at 1247.

²¹⁶ T. TIBOR & I. FELDMAN, ISO 14000: A GUIDE TO THE NEW ENVIRONMENTAL MANAGEMENT STANDARDS at 8 (1996); *but see* U.S. Environmental Protection Agency, The Use of Life Cycle Assessment in Environmental Labelling (1993) [discussing technical difficulties of life cycle assessment] *as cited in* Orts, *supra* note 4, at 1247. These tools are still pretty premature and their long-term impacts or any legal conflicts they may cause have not been sorted out.

²¹⁷ Goodman, *supra* note at 129. In fact, an Institute for Defense Analysis (IDA) study found that 90% of the life-cycle costs of a weapon system are determined in the design phase. *Id.*

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.*

2. Reflexive Programs - Management Auditing

Management audits are a different sort of audit than the more common compliance audit or transaction audit.²²¹ Management audits evaluate a corporation's or facility's processes or procedures for:

- (1) identifying environmental noncompliance,
- (2) assessing environmental risks,
- (3) informing the corporation's decisionmakers of such risks, and
- (4) designing and implementing measures to prevent environmental violations and mitigate nonregulatory environmental hazards.²²²

The audit should review the organization, structure, and placement of the environmental oversight functions; the adequacy of existing company statements of the environmental mission, goals, and objectives; and review the current planning and control mechanisms and how they incorporate environmental criteria.²²³ The ultimate goal is to create a pervasive corporate culture of environmental awareness.²²⁴

a. EMAS and BS

There are several management standards and programs evolving in the international arena, with the Eco-Management and Audit Scheme (EMAS) and the British Standards (BS) being two of the standards adopted by two of the United States's largest trading partners.²²⁵ There have been calls for an American version of the EMAS, which to date is the most successful of the systems and has been hailed by both business and environmental

²²¹ Restatement of Policies Related to Environmental Auditing, 59 Fed. Reg. 38,455, 38,458 (1994), *as cited in* Orts, *supra* note 4, at 1276.

²²² *Id.*

²²³ *Id.*

²²⁴ *Id.*

²²⁵ EMAS was adopted by the European Community in April 1995. BS 7750 is a two year old United Kingdom standard.

interests.²²⁶ However, it is most likely that it will be ISO 14000 that is adopted by the United States business community.

b. ISO 14000

The International Organization for Standardization's (ISO) proposed standards for environmental management, ISO 14000, have been highly touted by the business community as the answer to a number of problems. The ISO 14000 series of standards includes environmental management systems, environmental auditing, environmental performance evaluation, environmental labeling, life cycle assessment, and environmental aspects in product standards.²²⁷ The separate standards that make up this series are important to know as individual elements as well as how they fit into the big picture, especially since some will be implemented early while others will take a lot more time. The only provisions presently drafted and waiting for approval to date are the environmental management, auditing and general principles standards. These are found in ISO 14001, 14004 (formerly 14000), and 14010 to 14012, respectively.²²⁸

ISO 14000 can be more fully understood through understanding ISO 9000. ISO 9000 is the standardized system of installing quality in the workplace.²²⁹ This system of standards is a guide for documenting, implementing, and demonstrating quality assurance procedures and quality processes throughout an organization.²³⁰ The aim is to eliminate rework by performing each aspect of a job in the best way possible. Any nonconformities are analyzed to determine why the process failed and then the process is modified so that a similar nonconformity will not occur.²³¹ Therefore, ISO 9000 is heavy into process analysis and

²²⁶ Orts, *supra* note 4, at 1313.

²²⁷ TIBOR & FELDMAN, *supra* note 216, at 35.

²²⁸ *Id.*, at 37.

²²⁹ Judith P. Bernazzani & Steer, *An Introduction to the ISO 9000 Series: Quality Standards*. NCMA TIPS, Jun. 1995, at 3.

²³⁰ *Id.*

²³¹ *Id.*, at 14.

control. Once a process is baselined, a process "loop" is built in to continually improve upon that process.²³² In many cases this requires the use of metrics.²³³ In order for all process users and management to know how a process performed and how that process was set up previously, the ISO 9000 standards require full and complete documentation of all processes and metrics.²³⁴ This documentation has the added effect of making management look at their processes from a more detached perspective. It, in itself, brings about many improvements in those processes, and management can see problems easier.²³⁵ The effect is amplified when others in or out of the company are allowed to see this documentation. Such review has the potential to bring about major paradigm shifts and improvements.²³⁶

The ISO 14000 management standard is very similar, except that it is concerned with environmental performance impacts of a company rather than quality. Like ISO 9000, ISO 14000 also relies upon the auditing and registering of organizations that have implemented objectively compliant programs.²³⁷ The theory is that since the process itself reviews and improves-on performance, audits are only needed to keep that process on track.

Many governments, including the US, may make ISO 14000 a procurement requirement, especially for their major contractors.²³⁸ The Department of Defense,

²³² *Id.* A "loop" in a process is a self-starting procedure that takes place at a certain point in the process. Continual improvement comes about when the loop is used to periodically bring about a reevaluation of the process to answer the question whether that process can be done better.

²³³ Metrics are measurements of the key factors that tell management whether their objectives are being met. CAVANAUGH, *On the Shoulders of Giants: Case Studies of Benchmarking and Reengineering for Continuous Improvement*, NCMA TIPS, Nov. 1995, at 12.

²³⁴ Bernazzani & Steer, *supra* note 229, at 10.

²³⁵ *Id.*, at 8.

²³⁶ Orts, *supra* note 4, at 1232.

²³⁷ Bernazzani & Steer, *supra* note 229, at 5.

²³⁸ See the 12-question survey conducted by the Arthur D. Little Company of Cambridge, MA as reported by Kara Sissell in *CHEMICAL WEEK*, Nov. 8, 1995, at 42. Responses came from 115 companies with sales of more than \$ 1 billion/year. Of those surveyed, 35% were process industries, including many chemical companies.

Department of Transportation, Coast Guard and the National Aeronautic and Space Administration have already required the ISO 9000 series of the majority of their contractors and it is expected that they will also be quick to adopt the ISO 14000.²³⁹

c. Problems

Generally, certification of ISO 14000 compliance does not necessarily mean that the certified company is effecting real environmental improvements.²⁴⁰ In fact, the most the certified or registered label says about a company is that it probably is compliant with the least restrictive interpretation of local rules and laws - though that is an area under debate as well.²⁴¹ The ISO Committee initially looked at creating a performance standard, however they quickly decided that was "undoable" since any minimum environmental standards would be, in effect, the present US standards.²⁴² That was not salable internationally and American business really did not want our command and control system exported throughout the world.²⁴³ That left drafting management standards without an environmental improvement requirement.²⁴⁴

This performance deception is not the only problem facing these standards. One problem well recognized by all businesses²⁴⁵ but especially problematic to small businesses is the cost involved.²⁴⁶ The average cost companies paid was \$245,200 for certification

²³⁹ Bernazzani & Steer, *supra* note 229, at 7.

²⁴⁰ SISSELL & MULLIN, *Fitting in ISO 14000; A Search for Synergies*, CHEMICAL WEEK, Nov. 8, 1995.

²⁴¹ TIBOR & FELDMAN, *supra* note 216, at 53.

²⁴² *Trade: Unequal Environmental Standards Pose Competitive Problem but Solutions Vary*, 1994 BNA DAILY ENV. REP. 214 d3.

²⁴³ *Id.*

²⁴⁴ In order for ISO 14000 adoption to be truly a beyond-compliance innovation it would also have to include environmental improvement goals, tracking and continual improvement; compliance tracking and goals and audits to check both the management process and environmental compliance. *Green Auditing: EEB Mounts Campaign against ISO Standards*, *supra* note 246.

²⁴⁵ SISSELL & MULLIN, *supra* note 240.

²⁴⁶ TIBOR & FELDMAN, *supra* note 216, at 17.

under ISO 9000 and most businesses expect similar costs for ISO 14000.²⁴⁷ This cost factor is keeping some small businesses away from these standards and some major businesses from going through with the certifications even though they have implemented the management standards.²⁴⁸

Another commonly discussed issue is best summed up by a quote. A senior corporate environmental official noted that when it came to Government oversight "No good deed goes unpunished."²⁴⁹ This relates to the punishing of companies by the regulators for infractions disclosed only through voluntary audits and evaluations. This quote has been applied to the implementation in the United States of the ISO 14000 standards and audits.²⁵⁰ This fear is especially strong for small businesses whose owners are less insulated from criminal penalties than large corporations.²⁵¹ It is this fear that was the core of a continuing debate on the releasability of audit reports.²⁵²

²⁴⁷ *Id.* at 183.

²⁴⁸ Harris, *ISO 14000 Bandwagon Looks for Riders*, ENV. TODAY, Aug. 1995, at 1, 19.

Presently, there is no approved qualifying agency for certifying companies yet.

²⁴⁹ *Report of the Corporate Environmental Enforcement Council: Hearings Before the Before the Committee on the Judiciary*, 104th Cong., 1st Sess. (1995) (prepared testimony on behalf of the BFGoodrich Co.).

²⁵⁰ SISSELL & MULLIN, *supra* note 240.

²⁵¹ *Small Manufacturers Realize Positive Economic Returns with Improved Environmental Management*, PR NEWswire, Nov. 21, 1995.

²⁵² The United States delegates to the ISO feared that the EPA and the DOJ will use any publicly released environmental audit reports against otherwise compliant corporations. SISSELL & MULLIN, *supra* note 240. Most companies feel that regardless of good faith and no criminal intent, that environmental miscues happen from time to time and that the EPA and DOJ will take any released reports of audits and crucify the companies involved. Goodrich Testimony, *supra* note 249. The EPA has fueled this fear by refusing to give strong assurances that this would not be done. In fact the opposite is true. Both EPA and DOJ have outwardly declared that they intend to keep all their enforcement options available and at their discretion regardless of any ISO implementation. *Id.* This fear is not generally felt outside the United States. Most countries do not allow the audit information to be used for criminal/civil prosecutions. See 1995 BNA DAILY ENV. REP., INTL ROUNDUP 193 d18. [Story on German implementation of the EU voluntary Eco-Audit law.]

One commentator has noted that, "Without sufficient reason for businesses to sign up for a program that would expose them to public scrutiny and incur significant costs of developing environmental management and auditing processes, any voluntary EMAS system will fail."²⁵³ Incentives devised to urge businesses to adopt environmental management systems should include provisions that counter the problems identified above including some immunity for companies that voluntarily disclose environmental problems.²⁵⁴

3. Environmental Technology

The best summation of this innovative goal is by Congress:

"One key to sustaining economic growth and maintaining the quality of the environment is technological innovation. Continued innovations offer the prospect for more cost-effectively controlling and remediating environmental problems. But more importantly, technological innovations have the potential for producing new or improved products and processes that are more competitive, produce lower levels of pollution, and use materials and energy more efficiently. Lower levels of pollution from the manufacturing process means lower pollution control and disposal costs, and reduced energy and materials use reflects increased process efficiencies. New technologies that are more environmentally sound can pay increasing dividends to both the economy and the environment."²⁵⁵

Other nations, most notably those of the European Community and Japan, have jumped out ahead of the United States in the environmental technology area by working cooperatively with their industries.²⁵⁶ President Clinton and his administration have been ardent advocates of the need for large-scale environmental technological innovation:

²⁵³ Orts, *supra* note 4, at 1324.

²⁵⁴ *Id.*

²⁵⁵ H.R. REP. NO. 536, *supra* note 50, at 18.

²⁵⁶ *Id.*

"Today, environmental technology offers a win-win opportunity for our nation and the world as a whole: economic growth through the development and diffusion of environmental technology will result in more jobs, and a clean environment will mean a higher standard of living for ourselves and the generations that follow."²⁵⁷

"Reconciling these goals requires an environmental technology strategy that helps industry shift from waste management to pollution prevention, efficient resource use, and industrial ecology."²⁵⁸

Environmental technology includes those hardware, software, systems, and services that reduce risk, enhance cost effectiveness, improve process efficiency, and creates products and processes that are environmentally beneficial or benign.²⁵⁹ There are four types of environmental technology: avoidance, monitoring and assessment, control, and remediation and restoration.²⁶⁰ Avoidance refers to technologies that change present processes so as to not produce environmentally hazardous substances or otherwise hurt the environment.²⁶¹ This includes product substitution or process redesign, rather than the use of new pieces of equipment.²⁶² Monitoring and assessment technologies relate to setting an environmental baseline through the measuring of pollution releases and ambient monitoring.²⁶³ Control technologies are add-on technologies that render hazardous substances harmless before they are emitted.²⁶⁴ Remediation and restoration technologies are designed to improve the environment after pollution release.²⁶⁵ The overall goal, however, is for the adoption of

²⁵⁷ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 2.

²⁵⁸ *Id.* at 2-3.

²⁵⁹ *Id.* at 8-9.

²⁶⁰ *Id.* at 9.

²⁶¹ *Id.*

²⁶² *Id.*

²⁶³ *Id.*

²⁶⁴ *Id.*

²⁶⁵ *Id.*

products and processes designed from the outset to minimize the use of natural resources and the emissions of pollutants.²⁶⁶

II. *Contract Incentives*

We now know why we need to have incentives, what sort of innovation we are trying to incentivize, and some inherent problems we might face. We must look now at the incentive options available to the government, especially in regards to companies contracting with the government. Basically, the government has three options: contract incentives, tax incentives, or environmental incentives.

Contract incentives are special to government contractors alone. They make use of the various contract mechanisms available and presently used in government contracts today. The difference here is the using of these mechanisms to aid the environment usually as an integral part of the primary contract objective.

Tax incentives are some of the most well known environmental market incentives in use today.²⁶⁷ They can be structured to incentivize all businesses or just government contractors (recognizing the dual benefits environmental innovation will bring to the government). The most innovative environmental tax incentives to date have been devised by the states. Such incentives can be used by state and local governments to incentivize all businesses in that jurisdiction, including government contractors, or they can specifically target government contractors contracting with the state or local government. Further, such local incentives are good examples for more federal tax incentives to be used with Federal government contractors.

Environmental incentives are also discussed. They tend to be more generalized in nature and are not usually applied only to government contractors. However, many federal

²⁶⁶ *Id.*

²⁶⁷ *See discussion infra.*

agencies may want to relook at these incentives as a way to get their contractors moving toward beyond-compliance innovation. The government to contractor relationship offers some differences in use and implementation that we will discuss in more detail later.

First, we will look at contract incentives.

A. Monetary

1. Award Fee

The most flexible option, of course, is money. It is the most fungible asset available. The question for the Government in incentivizing government contractors is how to structure a monetary incentive under the Federal Acquisition Regulation (FAR). One way to incentivize beyond-compliance efforts is through an award fee.²⁶⁸ An award fee is a bonus paid to a government contractor for extra performance beyond the minimum requirements of the contract based on a subjective review of the contractor's efforts using objective contract parameters.²⁶⁹ Though more commonly used to reward higher quality services on cost-reimbursement contracts, it is not unusual to use award fees to reward innovation and performance objectives on cost-reimbursement or fixed price contracts.²⁷⁰ It can be used to reward environmental innovation and other beyond-compliance environmental efforts.²⁷¹ In short, it is a powerful motivational tool that places great leverage in the government's hands, enabling the government to reward innovation by appealing to the company's pocketbook--with a minimum of red tape and without second-guessing by third parties.²⁷²

²⁶⁸ Maj. Lara, *Litigation That Might Be Avoided: Deductions for Nonperformance*, ARMY LAW., July, 1992, at 26; see also DOE, *Westinghouse Revamp Hanford Pact*, *supra* note 193.

²⁶⁹ Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee Contracts, 60 Fed. Reg. 43,402 (to be codified at 48 C.F.R. pts. 1516 & 1552) (proposed Aug. 21, 1995).

²⁷⁰ Lara, *supra* note 268; see also Matter of: Diversified Contract Services, Inc., B-224152, 86-2 CPD P 675 (Dec. 15, 1986).

²⁷¹ Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee Contracts (CPAF), *supra* note 269.

²⁷² James C. Roan, Jr., *Streamlining Government Acquisition (Or, "Why can't the Government Figure Out How to Use Commercial Practices?")*, ARMY LAW., May, 1995, at

a. How It Works

Award fees find their genesis in FAR 16.404-2, though there are related concepts throughout section FAR 16.4.²⁷³ FAR 16.404-2 defines award fee as:

"an award amount that the contractor may earn in whole or in part during performance and that is sufficient to provide motivation for excellence in such areas as quality, timeliness, technical ingenuity, and cost effective management."²⁷⁴

It goes on to state that the determination of the award fee amount is a unilateral Governmental "judgmental evaluation" based on criteria agreed to in the contract.²⁷⁵

The FAR discusses award fees strictly in the context of a cost-plus award fee contract,²⁷⁶ though there is no prohibition about using it with other types of contracts and agency supplements often specifically authorize that.²⁷⁷ The FAR says that an award fee "effectively motivates the contractor toward exceptional performance and provides the Government with the flexibility to evaluate both actual performance and the conditions under which it was achieved."²⁷⁸ This description would seem to support the idea of an

58.

²⁷³ 48 C.F.R. § 16.4 (FAR) (1994).

²⁷⁴ 48 C.F.R. § 16.404-2 (FAR) (1994).

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ *See, e.g.* 48 C.F.R. § 216.470 (DFARS) (1994) ["The 'award amount' portion of the fee may be used in other types of contracts under the following conditions-- (1) The Government wishes to motivate and reward a contractor for management performance in areas which cannot be measured objectively and where normal incentive provisions cannot be used. For example, . . . ingenuity . . . (2) The 'base fee' (fixed amount portion) is not used. (3) The chief of the contracting office approves the use of the 'award amount.' (4) An award review board and procedures are established for conduct of the evaluation. (5) The administrative costs of the evaluation do not exceed the expected benefits."] *Id.* *See also* for example Matter of: Diversified Contract Services, Inc., B-224152, 86-2 CPD P 675 (Dec. 15, 1986).

²⁷⁸ 48 C.F.R. § 16.404-2(b)(ii) (FAR) (1994).

award fee established on a government contract that would reward a contractor for environmentally innovative work or other beyond-compliance achievements.

Typically, the concept of an award fee is agreed to between the government and the contractor and incorporated into the contract through a clause and an award fee plan. The clause will typically explain the award fee procedures and the plan will expand on that explanation and list the award fee criteria.²⁷⁹ The award fee plan will also identify the ratings, the manner in which the award fee process will be carried out, and when award fee payments will be made.²⁸⁰ When the performance period or event has occurred, the contractor's performance will be evaluated by government personnel and their report, along with a self-report from the contractor, is reviewed by an award fee board of senior program officials.²⁸¹ This board recommends how much of the award fee "pool" should be given to the contractor in accordance with the criteria in the contract.²⁸² The appointed Fee Determining Official (FDO) will review the contractual criteria, the various reports, and any briefings from the award fee board or the contractor and make the final decision on how much award fee was earned for that period or for that project.²⁸³ The contractor is paid through a modification to the contract and at the same time is informed of what strengths and weaknesses were found in the contractor's performance.²⁸⁴

There are a number of limits and rules concerning this process.

²⁷⁹ For example, see EPA FARS 1552.216-70 "AWARD FEE" clause (Sept 1995).

²⁸⁰ Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee Contracts, *supra* note 269.

²⁸¹ *Id.*

²⁸² The award fee pool is the maximum allowable fund of money for award fee disbursement. Usually only a percentage of the pool is actually disbursed. *Id.*

²⁸³ *Id.*

²⁸⁴ *Id.*

b. Contract Writing

The award fee clause must specify that the award fee determination is not subject to appeal under the Disputes clause.²⁸⁵ The contract amount, performance period, and expected benefits must be sufficient to warrant the additional administrative effort and cost associated with the award fee portion of the contract.²⁸⁶ Any contracts with an award fee must have a signed D&F.²⁸⁷ Cost of performance must be considered in all contracts.²⁸⁸

Four areas of concern are crucial to an effective award fee: 1) the amount of the available fee, 2) the criteria for earning the fee, 3) fee allocation, and 4) rollover.²⁸⁹ Several factors must be considered in establishing the amount of the "fee pool," including available funding, any statutory maximum fee, complexity of the effort, the amount of profit on the balance of the contract, the financial risks to the contractor, and the potential benefits that may accrue - both environmentally and economically.²⁹⁰ Generally, the larger the award fee pool, the more leverage the government has over the contractor.²⁹¹ The crucial question in determining the evaluation criteria is "How do we measure success?"²⁹² This is done by centering attention on the possible benefits of a project and selecting those most important to

²⁸⁵ 48 C.F.R. § 16.405(e)(3) (FAR) (1994). However, case law indicates that a limited appeal regarding the terms and conditions of the award fee provisions and any changes regarding those provisions is possible. Maj. Jones, *Award Fees May be Disputed*, ARMY LAW., Dec. 1989, at 45; *But cf.* Phillip M. Kannan, *Challenging Award Fee Determinations under Federal Government Contracts*, 20 PUB. CONT. L. J. 197 (1991). [Mr. Kannan makes a case that the FAR violates law and important public policies in saying the Disputes clause does not apply.]

²⁸⁶ 48 C.F.R. § 16.404(c)(3) (FAR) (1994).

²⁸⁷ Determination and Finding. See 48 C.F.R. § 16.403(c) (FAR) (1994) and 48 C.F.R. § 16.301(c)(3) (FAR) (1994).

²⁸⁸ 48 C.F.R. § 16.402-1(a) (FAR) (1994).

²⁸⁹ Capt. Gregory A. Garrett & LTC Alan S. Gilbreth, *Creating and Allocating Fees on CPAF Contracts*, CONT. MGMT., Sep. 1992, at 9.

²⁹⁰ *Id.*; See also James H. Gill, *Award Fee - How Much is Enough?*, CONT. MGMT., May 1996, at 48.

²⁹¹ Gill, *Id.*

²⁹² JOHN CIBINIC, JR. & RALPH C. NASH, JR., *FORMATION OF GOVERNMENT CONTRACTS* 784 (2nd ed. 1986).

the Government.²⁹³ For example, in the environmental context it is environmental innovation that lessens pollution emissions from areas where the Government is considered responsible that will be more important to the Government than the reduction of emissions at the contractor's home plant. It is also important that contractor's success be rewarded, not merely the company's efforts to achieve success.²⁹⁴

Most award fee evaluation periods are from four to six months in duration.²⁹⁵ This recognizes that award fee evaluations should be conducted as often as reasonable to provide contractors with the maximum amount of feedback on performance and the maximum cash flow.²⁹⁶ However, the administrative cost of the process (which is a function of the amount of evaluations conducted) should never outweigh the value of the feedback.²⁹⁷

The amount of the award fee can vary with every evaluation period or event.²⁹⁸ With technological development, the award fee should be set to pay for developed and usable designs whenever the contractor has any, rather than at a pre-set time period. In an environmental context, the payment criteria could correlate with the environmental life cycle reduction of pollution effected by the technological change. Of course, the contractor is always limited to funds in the award fee pool.

The final critical area is rollover.²⁹⁹ Rollover is when unearned award fee may be carried forward for possible award in subsequent evaluation periods.³⁰⁰ Since the use of

²⁹³ *Id.*

²⁹⁴ *Id.*

²⁹⁵ Garrett & Gilbreth, *supra* note 289, at 9.

²⁹⁶ *Id.*

²⁹⁷ *Id.*, at 18. Administrative burden is composed of the time for contracting officers and technical representatives to review and monitor the contractor's efforts and to capture those efforts on paper so as to justify an award.

²⁹⁸ *Id.*

²⁹⁹ *Id.*

³⁰⁰ An example of this is when a contractor only earns 85% of the award fee pool in a certain evaluation period. The 15% that was not earned is usually released from the contract and used by the agency elsewhere. Rollover allows the government to add that 15% on the next evaluation period's award fee amount. This intensifies the contractor's efforts in that

evaluation time periods is not advisable in the incentivizing of innovation it is probably not as crucial.³⁰¹ However, if the award fee is structured with evaluation time periods and not based on product design accomplishments, rollover will become very important to both the contractor and the government. Rollover should be the exception rather than the rule or the contractor may lower performance early in the contract.³⁰² Rollover does, however, allow the Government to take learning curve and implementation problems into account that were not otherwise expected.³⁰³

c. Award Evaluation and Payment

"Award Fee is an objective process which uses a subjective analysis of a contractor's performance. Even though the standards are objective and the process parameters can be described precisely, the process is based upon the judgment of reviewers who assess the contractor's performance."³⁰⁴ The subjectivity of the analysis is critical to the award fee process and objective methods in determining the award fee pool or in the final award amount should not be used as a substitute.³⁰⁵ Subjective analysis brings about flexibility and consistency in the award fee determination.³⁰⁶ The fee earned must correlate to the

next period since the possible reward is greater.

³⁰¹ Many award fee plans are structured around evaluation periods of certain timed length. This rewards the contractor's efforts for the period. However, since environmental innovation should be rewarded only when the contractor is successful rather than when the contractor is trying hard, evaluation time periods are not advisable in this context.

³⁰² *Id.*

³⁰³ *Id.*

³⁰⁴ Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee Contracts, *supra* note 269.

³⁰⁵ Garrett & Gilbreth, *supra* note 289, at 8. The attractiveness to the government of an award fee system surrounds the flexibility inherent in a subjective evaluation of the contractor. It is the heart of the award fee system versus the more objective performance standard or incentive fee contract incentives. Further, the DOD profit policy relies on the subjective nature of the award fee to justify the larger potential profits on award fee contracts.

³⁰⁶ *Id.*

performance of the contractor as applied against the criteria of the contract.³⁰⁷ Minimal acceptable performance must be maintained through all areas of the contract or contract remedies may be asserted.³⁰⁸ Fixed price contracts should offer healthy award fees since that will be the sole reward of any development work.³⁰⁹

d. Benefits

There are a number of benefits in the use of an award fee to incentivize environmental innovation for both the government and the contractor. For the government, there is great flexibility in judging what projects are truly beneficial and what the end results in terms of pollution abatement truly are.³¹⁰ The award fee process increases the communication between the government and the contractor which is helpful to both parties.³¹¹ Experience has shown that award fees are effective motivational tools for the government.³¹² For the contractor, there is a chance to partially offset the development costs for technology that can be beneficial to both the environment and the future profit line of the company. Other contractors may even use the award fee as additional profit on government work.³¹³ The contractor can also use the award as a pass-through motivational award to his employees. This has dual benefits of increasing employee morale while overcoming the

³⁰⁷ 48 C.F.R. § 16.404-2(b)(3) (FAR) (1994).

³⁰⁸ 48 C.F.R. § 16.404-2(b)(2) (FAR) (1994).

³⁰⁹ Cost reimbursable contracts will fund the contractor's development costs on top of the award fee. CIBINIC & NASH, FORMATION, *supra* note 292, at 772.

Id.

³¹⁰ *Id.* at 786.

³¹¹ Garrett & Gilbreth, *supra* note 289, at 8; *See also* CIBINIC & NASH, FORMATION, *supra* note 292, at 789.

³¹² CIBINIC & NASH, FORMATION, *supra* note 292, at 775.

³¹³ *Id.* at 789; "Government work is already less profitable than other work. A typical CPAF contract has a 7% fee (3% base and 4% award), but that is before: award fee ratings; award fee erosion due to level of effort; unallowable costs; late payment; arbitrary withholdings, etc. Commercial work profit ranges of 10-30% are typical, with little paperwork and few hassles." Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee (CPAF) Contracts, *supra* note 269.

mission-only orientation of the employees,³¹⁴ and for cost-reimbursement contractors it may also allow them to place an equal amount in corporate profits as goes to the employees.³¹⁵

e. Problems

There are also a number of problems inherent in this incentive. The government must find the money in an already tight budget. Even if they have the money, award fees are a chore to administratively track and commit. Award fee plans, to be effective, usually stretch over the life of the contract which can be several years. With the limitation of funds and the limitation on fund life there are usually a number of budgeting problems on getting the right sort of money applied to the contract correctly.³¹⁶ It can also tie up money that will never be used. For example, if the award fee pool is \$10 million, all \$10 million must be administratively committed in year one. If only \$8 million is ultimately awarded to the contractor at the end of year three, there will not be enough time to reobligate the other \$2 million before the money expires. Federal agencies see this as throwing money away. Of course, careful planning can alleviate or eliminate the above problems. For example, in our funding example, the government could have some unfunded requirements in a separate indefinite delivery/indefinite quantity (ID/IQ) contract and some of this fallout money can be applied to those unfunded requirements.³¹⁷

³¹⁴ See discussion *supra* at I.C.4.

³¹⁵ Celeasco Industries, Inc., ASBCA 20569, 77-1 BCA 12,445, (1977), *motion for reconsideration* sustained on other issue, 77-2 BCA 12,585 (1977). [Contractor allowed to recover as costs a dollar amount equal to the award fee amounts passed on to employees as motivational awards. Thus the contractor, in effect, obtained double the award fee awarded by the government.]

³¹⁶ In 1990, the Congress changed the funding laws to require funds to expire at the end of their period of availability. P.L. 101-510 (1990). Funds can only be obligated during the period of availability. Five years after funds expire, the funds become no longer available for payment. Many large contracts extend seven to ten years or longer. Award fees are obligated at the time of contract award and thus must be paid prior to the time funds become no longer available for payment. See generally GAO, *Financial Management: Agencies' Actions to Eliminate "M" Accounts and Merged Surplus Authority* (April 1993).

³¹⁷ ID/IQ is the acronym for Indefinite Delivery/Indefinite Quantity contracts. These contracts are like catalog shopping in that the government sets up the contract ahead of time

Another problem for the government is the administrative time and expense of evaluating the contractor's efforts about which the FAR seems so concerned.³¹⁸ This is always a problem for award fee contracts as the government never has enough man-hours to perform the work it already has. However, in our situation the problem should not be as great. In the usual cases, the focus of the review is on the contractor's efforts. However, with environmental projects, the review will be by government engineers and contract specialists as a paper exercise. Since we are rewarding only their results, there is no reason to be reviewing all their work sheets or cost figures. In general, however, award fee contracts are complex and therefore need to be handled carefully.³¹⁹

A problem for the contractor, or at least a perceived problem, relates to the FAR rule that the award fee decision is not subject to the Disputes clause.³²⁰ Contractors often feel powerless to influence an award decision that may be crucial to the survival of their company. Universally, contractors have argued for some appeal forum or have argued that this provision is illegal.³²¹ Courts and boards have steadfastly upheld this rule.³²² They have held, however, that courts and boards do have jurisdiction to review the decision to determine there was no abuse of discretion or that the Fee Determining Official (FDO) did not veer from the contract and the evaluation criteria.³²³ The government usually does not

and then as needs emerge and funding becomes available, the government can order from this contract. *See further* 48 C.F.R. § 16.504 (FAR) (1994).

³¹⁸ *See* 48 C.F.R. § 16.404-2(c)(3) (FAR) (1994).

³¹⁹ Garrett & Gilbreth, *supra* note 289, at 18. For example, there may be difficulties specifying the necessary testing that would verify the contractor's claims that the benefit to the environment has been met. *See e.g.* Western Electric Co., ASBCA 16110, 73-1 BCA 10,013 (1973).

³²⁰ 48 C.F.R. § 16.405 (FAR) (1994).

³²¹ Kannan, *supra* note 285.

³²² *See e.g.* Appeal of Burnside-Ott Aviation Training Center Under Contract No. N68520-89-C-0017, ASBCA No. 43,184, 94-1 BCA 26,590 (1993).

³²³ *Id.*; *See also* discussion at Jones, *supra* note 285.

perceive this limited review as a threat to the award fee system. In fact, many contracting officers refuse to admit that such review can take place!

A related systemic problem is a standard governmental reservation to unilaterally make changes, without appeal or dispute, to the award fee plan and the evaluation criteria *after* award.³²⁴ Contractors, who often will structure their contract proposal to maximize their award fee recoveries, feel betrayed if the government exercises this right.³²⁵ Contractors feel this "is 'bait and switch' at its worst."³²⁶ In order to maximize their award fee recovery, contractors may have to reorganize portions of their planned work. However, the costs of such reorganization are rarely recoverable.³²⁷ Agencies, however, feel that as long as they notify the contractor of the change in advance, but after contract award, the contractor should be happy to suck up any reorganization costs.³²⁸ They almost universally view this as a non-problem.³²⁹

Award Fee is a present incentive that is available to the government to push their contractors toward environmental innovation.³³⁰ Money always is a good incentive, but especially in a research and development area where start-up costs are an important issue in the success of the development.³³¹ William Hood, the Director of New Initiatives at Lockheed Sanders, Inc., testified to Congress that "seed money" was needed if the Government wanted environmental innovation to take place at smaller companies.³³² An

³²⁴ Environmental Protection Agency, Acquisition Regulation; Cost-Plus-Award Fee Contracts, *supra* note 269.

³²⁵ *Id.*

³²⁶ *Id.*

³²⁷ *Id.*

³²⁸ *Id.*

³²⁹ *Id.*

³³⁰ The idea of award fees as an environmental innovation incentive was suggested in the NSIC White Paper discussed at the Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit. Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit, 146 F.R.D. 205 (1993).

³³¹ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 12.

³³² H.R. REP. NO. 536, *supra* note 50, at 28. Award fees for environmental innovation on

award fee is one way to get money to contractors and get tangible results for the Government.

2. Value Engineering

Another monetary incentive that is available in the Government contract arena is the concept of value engineering.³³³ Value engineering is an acquisition technique designed to incentivize three goals: "innovation, efficiency, and above all, cost savings."³³⁴ This incentive sets loose the innovative ability of the contractor through a negotiated contract provision which provides that if the contractor submits an engineering change to the government which lowers the costs of the product or the overall costs to the government, the government will share those savings with the contractor in addition to the contract price.³³⁵ This is usually a strong incentive for innovation for government contractors.³³⁶ OMB Circular A-131 requires agencies to make greater use of value engineering-type incentives.³³⁷

contracts for supplies and services allow companies to advance money or borrow money to research or develop new ideas as it binds the government to pay for advancement in environmental technology. Though, the ultimate award amount is subjective, the award fee provision is contractually binding and thus binds the government and incentivizes the start of these type of projects. Though not "seed money" for the initial start of the project, the commitment acts as such and the receipt of funds brings about the continuation of such research and development.

³³³ The idea of a value engineering type system as an environmental innovation incentive was suggested in the NSIC White Paper discussed at the Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit. Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit, 146 F.R.D. 205 (1993).

³³⁴ Maj. Blane B. Lewis, *Technical Data Rights in Government Contractor Value Engineering Change Proposals*, ARMY LAW., Nov. 1994, at 12.

³³⁵ Robert D. Witte, *VECP Priorities*, CONT. MGMT., Nov. 1990, at 39.

³³⁶ RALPH C. NASH, JR., GOVERNMENT CONTRACT CHANGES 9-18 (1989).

³³⁷ JOHN CIBINIC, JR. & RALPH C. NASH, JR., ADMINISTRATION OF GOVERNMENT CONTRACTS 412 (3rd ed. 1995).

A similar clause that would call for innovation to lessen the environmental burden of a product or process should have a similar incentive effect.³³⁸ A separate effort is needed as the FAR value engineering clause is tied to cost reduction alone, so any environmental reduction clause would face two inherent problems. One would be the need for a FAR deviation to modify the value engineering clause.³³⁹ The second problem is the creation of a pollution pricing methodology that would become the basis of the cost sharing to reward the contractor.³⁴⁰ Value engineering is particularly adaptable to use as a tool for those sorts of innovations in government products or the production of those products because the reductions of emissions on a product becomes multiplied by the number of products purchased and deployed, as well as, how long those products are used. First, to understand this clause better, let's look at the value engineering clause as the FAR presents it; then we will look at alternatives - similar value engineering type incentives that can be found presently in government contracts. Finally, we will compare the benefits and problems of this incentive from both government and contractor perspectives.

a. The FAR Value Engineering Program

The Federal Acquisition Regulation (FAR) defines value engineering as "an organized effort to analyze the functions of systems, equipment, facilities, services, and

³³⁸ Such a clause has been called for previously by environmentalists and green corporations and has been put to use in limited circumstances. See Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit, 146 F.R.D. 205 (1993); see also Department of Transportation, Energy Conservation by Recipients of Federal Financial Assistance, 45 Fed. Reg. 58,022 (to be codified at 14 C.F.R. pts. 152 & 199, 23 CFR Parts 420, 450, 630, and 1204, 49 CFR Parts 258, 260, 266, and 622) (proposed Aug. 29, 1980).

³³⁹ See 48 C.F.R. § 1.4 (FAR) (1994).

³⁴⁰ This methodology is a similar problem to the one we saw in the award fee area where a formula must be devised that arrives at a dollar figure per volume of pollution emitted that would incentivize the contractor to work at lowering those emissions. This is already a requirement of many market incentives proposed or in place. For example, any tax incentive needs to determine the cost to society of the pollution emissions. The President and EPA recognize that this needs to be done and has called for actions to be taken to develop such a methodology. U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 108.

supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety."³⁴¹ Most supply, service, or construction contracts of \$100,000 or more contains a value engineering clause.³⁴² The contracting officer can include a value engineering clause in smaller contracts and architect-engineer contracts.³⁴³

Value engineering is usually implemented through contract modifications.³⁴⁴ First, a contractor will propose an innovative idea to the contracting officer in the form of a value engineering change proposal (VECP).³⁴⁵ The contracting officer can reject or accept the proposal, but either way, the decision is final and is not subject to the Disputes clause,³⁴⁶ though limited review is available under an arbitrary and capricious standard.³⁴⁷ Any cost savings that come from the VECP is shared with the contractor as a reward for the contractor's efforts.³⁴⁸ Any question on whether to accept or reject the proposal or dispute over the worth of the VECP should be determined in favor of the contractor.³⁴⁹ There are four types of savings that can be shared between the government and the contractor: savings from the instant contract,³⁵⁰ savings from concurrent contracts,³⁵¹ savings from future

³⁴¹ 48 C.F.R. § 48.001 (FAR) (1994).

³⁴² 48 C.F.R. § 48.201(a); 48.202 (FAR) (1994).

³⁴³ 48 C.F.R. § 48.201(a); 48.202, 48.201(f) (FAR) (1994).

³⁴⁴ 48 C.F.R. § 52.248-1(e)(3) (FAR) (1994).

³⁴⁵ 48 C.F.R. § 52.248-1(a) (FAR) (1994). Each VECP should include the information listed in the VECP clause FAR 52.248-1(c).

³⁴⁶ 48 C.F.R. § 48.103(c); 52.248-1(e)(3); 52.248-3(e)(3) (FAR) (1994). The disputes clause is located at FAR 52.233-1. The challenge for the contracting officer is in getting competent engineering support to evaluate the proposal.

³⁴⁷ In *ICSD Corporation*, ASBCA No. 28028, 90-3 BCA 23,027, *affd.*, 934 F.2d 313 (Fed. Cir. 1991).

³⁴⁸ 48 C.F.R. § 52.248-1(f) (FAR) (1994).

³⁴⁹ See generally *Airmotive Eng'g Corp. v. United States*, 535 F.2d 8, 12 (Ct. Cl. 1976); *Mishara Constr. Co.*, ASBCA No. 17957, 75-1 BCA 11,206 at 53,357; *Airmotive Eng'g Corp.*, ASBCA No. 17139, 74-1 BCA 10,517, at 49,836-37, *mot. for reconsid. denied*, 74-2 BCA 10,696.

³⁵⁰ This is the contract for which the VECP is submitted. 48 C.F.R. § 52.248-1(b) (FAR) (1994).

contracts,³⁵² or collateral savings.³⁵³ All savings are calculated separately but paid together on the instant contract.³⁵⁴ Any savings are net in that the development or implementation costs are reimbursed first.³⁵⁵ Payments can be by royalty method or with a negotiated lump sum.³⁵⁶ Concurrent savings are limited to the greater of the contract percentage or 20% of the projected savings for one year of use.³⁵⁷ There is an overall cap on concurrent savings consisting of the contract's price or \$100,000, whichever is greater.³⁵⁸ The sharing ratios for all types of savings are listed in FAR 48.104-1(a)(1).³⁵⁹

The FAR provides for either an incentive value engineering program or a mandatory value engineering program.³⁶⁰ The incentive program relies on voluntary contractor participation, and pays the largest dividends to get that participation.³⁶¹ The FAR allows this provision to be included in a wide variety of contracts at the Contracting Officer's discretion.³⁶² The "mandatory" program, is a negotiated contract provision that is paid for through the contract.³⁶³ It requires the contractor to constantly work at value engineering approaches.³⁶⁴ The contractor's share of any savings derived from this mandatory program is

³⁵¹ These are other ongoing contracts to which the contracting office applies the VECP. 48 C.F.R. § 52.248-1(b) (FAR) (1994).

³⁵² These are contracts with the same contracting office or its successor where the VECP is incorporated (usually limited to a share period of three years following acceptance of the first item or services incorporating the VECP). 48 C.F.R. § 52.248-1(b) (FAR) (1994).

³⁵³ Collateral savings are government cost savings related to the items or services procured under the instant contract, including savings on operations, maintenance, logistic support or government furnished property. 48 C.F.R. § 52.248-1(b) (FAR) (1994).

³⁵⁴ CIBINIC & NASH, ADMINISTRATION, *supra* note 337, at 414.

³⁵⁵ NASH, *supra* note 336, at 9-22.

³⁵⁶ *Id.* at 9-24 to 9-25.

³⁵⁷ *Id.* at 9-24 to 9-27.

³⁵⁸ *Id.*

³⁵⁹ 48 C.F.R. § 48.104-1(a)(1) (FAR) (1994).

³⁶⁰ 48 C.F.R. § 48.101(b) (FAR) (1994).

³⁶¹ *Id.*

³⁶² NASH, *supra* note 336, at 9-17.

³⁶³ 48 C.F.R. § 48.101(b)(2) (FAR) (1994).

³⁶⁴ NASH, *supra* note 336, at 9-17.

smaller than in the voluntary program.³⁶⁵ It is required for use on all contracts for initial production solicitation and major acquisition programs, unless determined otherwise by the contracting officer.³⁶⁶

A VECP cannot involve a change in the following:

- "(1) in deliverable end item quantities only,
- (2) in research and development (R&D) items or R&D test quantities that are due solely to results of previous testing under the instant contract, or
- (3) to the contract type only."³⁶⁷

The contractor must originate the VECP to obtain a portion of the savings.³⁶⁸ The proposal must result in instant contract savings or the contractor may not collect anything.³⁶⁹

b. Other Value-Engineering Type Programs

The FAR sponsored program is the most well known, however, there are a number of other value-engineering type programs in use throughout the government. Many are established by local supplements to the FAR and many are contract specific provisions. An example of one of the most far-reaching programs is the C-17 Cost Reduction program.³⁷⁰ This program broke down the cost-reduction efforts by where the cost reductions would be

³⁶⁵ 48 C.F.R. § 48.101(b)(2) (FAR) (1994).

³⁶⁶ 48 C.F.R. § 52.248-1; 48-102(d)(2) (FAR) (1994). Such determination must be in writing. For DOD, such determination must be based on a good contractor history with the voluntary clause or the instant contract must be competitively awarded. Agencies do not have to mandate VECP programs in other contracts but must at least attempt to include VECP clauses in all appropriate contracts and subcontracts. 48 C.F.R. § 48.102(a) & (b) (FAR) (1994).

³⁶⁷ 48 C.F.R. § 48.001 (FAR) (1994).

³⁶⁸ CIBINIC & NASH, ADMINISTRATION, *supra* note 337, at 422.

³⁶⁹ Lewis, *supra* note 334, at 14. Instant contract savings will open the door to any other categories of savings provided for in the contract.

³⁷⁰ This program is laid out in the General Business Agreement (GBA) portion of Lots 3, 4, 5, and newer contracts for the C-17 Aircraft System. The contracts are with McDonnell Douglas Corporation and are kept at the C-17 System Program Office at Wright-Patterson AFB, OH.

sought and who would pay for the development of the cost reduction.³⁷¹ The IMIP (Industrial Manufacturing Improvement Program) would center on value engineering type improvements to the industrial facilities and equipment.³⁷² The PEP (Production Enhancement Program) centered on value-engineering type improvements to the production processes and assembly line.³⁷³ The CRC (Cost Reduction Changes) were value engineering improvements to the aircraft for which the contractor would fund the development costs themselves and in return receive a larger percentage of the savings than the mandatory VECP program in the contract would normally allow.³⁷⁴ These contractual vehicles for the sharing of cost savings were in addition to the mandatory value engineering clause. As these clauses went beyond the basic VECP program to find more cost reductions, similar clauses could also go beyond the basic VECP program to effect real pollution reductions.

c. Benefits

A value engineering clause that incentivizes environmental reductions would engender many more benefits for society at large than the inherent problems it would cause. It strictly ties the incentives to actual changes in products, facilities, or processes. The changes are designed to allow for large environmental savings for a small development investment. It would seem possible for the contractor to collect twice for the same innovation - if that innovation brought about both environmental advances and cost reductions. For the government, the cost involved may be paid for or at least offset to a degree by savings brought about by lower environmental emissions from government vehicles and equipment. The government will feel comfortable administering such a system as the difference between this system and the present value engineering system is really small.

³⁷¹ *Id.*

³⁷² *Id.* Authorization for this program is found in DFARS 215.870-4.

³⁷³ *Id.*

³⁷⁴ *Id.*

d. Problems

The main problem is the institutional establishment of such a system. This system will likely not succeed on a local level. Local implementation would be too fragmented to do much good.³⁷⁵ Such a program could be instituted agency by agency or through a change to the FAR. Pushing such a FAR change through the bureaucracy is a major problem. Other problems include the funding of such a program by both the government and the contractors.³⁷⁶ There would have to be strong commitment from both parties in order for this to work.

A second problem is the complexity of the system and its rules.³⁷⁷ That is a major reason it is not used more now and overlaying an environmental costing methodology will make it that much more complicated.³⁷⁸

The bottom line though is that such a program promises rewards worth the effort involved and should be attempted.

3. Allowable Costs

In government contracting the allowability of costs is a major issue. The FAR devotes two chapters to it and innumerable disputes are brought about by it.³⁷⁹ Though most important to contractors with cost reimbursement contracts, even fixed price contractors are effected through changes to contracts and sole source negotiations.³⁸⁰ There are a number of

³⁷⁵ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 27. [Commenting on the need to bring fragmented efforts together in a more consistent government wide effort.]

³⁷⁶ Government funding is presently limited with many essential requirements vying for the same funds. Environmental innovation is one of those essential requirements and requires additional funds. Award fees may incentivize increased innovation, but complete funding for the necessary research, development and/or implementation requires substantial contractor funds.

³⁷⁷ Capt. Eugene J. Pickarz, *Value Engineering - Whose Idea Was It Anyway?*, CONT. MGMT., Dec. 1990, at 4.

³⁷⁸ *Id.*

³⁷⁹ FAR Parts 30 and 31.

³⁸⁰ David K. Avery, *Accounting for Corporate Home Office Expenses*, CONT. MGMT., Sep.

types of costs that are *normally* not allowed by the FAR.³⁸¹ Usually the contracting office can recognize such costs for sufficient justification and reason.³⁸² This is often done through "advance agreements" where the contractor and the contracting office agree to the allowability of certain costs before the money is spent by the contractor.³⁸³ The agreement must be in writing and incorporated in the relevant contracts.³⁸⁴ It should be signed by both the contracting officer and the contractor.³⁸⁵ Beyond the power given to the local offices through advance agreements, each agency or the FAR council may have to grant a waiver for the allowability of certain costs.³⁸⁶ The determination of allowability is normally done under the rules set out in the FAR,³⁸⁷ including the specific allowability of certain costs.³⁸⁸

Since the allowability of certain costs are of great concern to government contractors, the determinations of allowability may incentivize contractors to make environmentally beneficial changes, especially where a normally disallowed cost has relevance to the

1992, at 20.

³⁸¹ 48 C.F.R. § 31.204 (FAR) (1994).

³⁸² B. J. Plunkett & Stephanie L. Busar, *Contract Cost Principles and Procedures*, NAVY OGC DESKBOOK, Mar. 92, at 17.

³⁸³ 48 C.F.R. § 31.109 (FAR) (1994).

³⁸⁴ 48 C.F.R. § 31.109(b) (FAR) (1994).

³⁸⁵ *Id.*

³⁸⁶ 48 C.F.R. § 31.109(c) (FAR) (1994). *See* 48 C.F.R. § 31.101 (FAR) (1994)

[... individual deviations ... require advance approval of the agency head or designee in the case of civilian agencies and the National Aeronautics and Space Administration and by the Director of Defense Procurement, Office of the Undersecretary of Defense for Acquisition (USDA(DP)) in the case of the Department of Defense.]. This high level of waiver authority creates near uniformity between agencies but does allow an avenue for action if a deviation from the norm is essential.

³⁸⁷ 48 C.F.R. § 31.205-1(a) (FAR) (1994). 48 C.F.R. § 31.201-2 (a) (FAR) (1994) provides the factors to consider in determining allowability which are:

- (1) Reasonableness
- (2) Allocability
- (3) Standards promulgated by the CAS Board, if applicable, otherwise, generally accepted accounting principles and practices appropriate to the particular circumstances.
- (4) Terms of the contract
- (5) Any limitations set forth in this subpart. *Id.*

³⁸⁸ 48 C.F.R. § 31-201-2 (a)(5); 31.205 (FAR) (1994).

pollution innovation needed. This has been suggested before by others.³⁸⁹ The following list offers some suggestions on how cost allowability can be exploited by the government.

a. Public Relations and Advertising Costs³⁹⁰

Public relations is defined as the maintenance and enhancement of the company's image or products.³⁹¹ It includes advertising which is "the use of the media to promote the sale of products and services." The general rule is that both advertising and public relations are unallowable costs except for certain enumerated items.³⁹² Any advertising required by contract, however, is allowable.³⁹³ Further, costs of promoting defense materials to other buyers are allowable.³⁹⁴

Allowing for advertisements that have an environmentally beneficial effect could be allowed by contract. This could be for the marketing of an environmental device created under the government contract but having a greater potential for commercial use. Another example would be advertisements highlighting a particular innovation and how it was used for the government. This subsidy of advertising expense may make the development of commercially usable products less risky.

b. Fines, Penalties, and Mischarging Costs³⁹⁵

Fines and penalties are generally unallowable.³⁹⁶ This can be a great impediment to technological innovation and "risk-taking." No company wants to try something new and be

³⁸⁹ The idea of modifying the normal allowability of certain costs as an environmental innovation incentive was suggested in the NSIC White Paper discussed at the Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit. Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit, 146 F.R.D. 205 (1993).

³⁹⁰ 10 U.S.C. § 2324(E)(1)(I) (1994); 48 C.F.R. § 31.205-1 (FAR) (1994).

³⁹¹ 48 C.F.R. § 31.205-1(a) (FAR) (1994).

³⁹² 48 C.F.R. § 31.205-1 (FAR) (1994).

³⁹³ 48 C.F.R. § 31.205-1(d)(1) (FAR) (1994).

³⁹⁴ 48 C.F.R. § 31.205-1(d)(2) (FAR) (1994).

³⁹⁵ 10 U.S.C. § 2324(E)(1)(D) (1994); 48 C.F.R. § 31.205-15 (FAR) (1994).

³⁹⁶ They are unallowable "except when incurred as a result of compliance with specific terms and conditions of the contract or written instructions from the contracting officer." *Id.*

left liable for possible environmental fines or penalties from state or federal EPAs. Working out some indemnity provision or waiver provision (through EPA) may be a large incentive to a company. Finding these penalties or fees allowable for environmental development reasons has a partial indemnification effect.

c. Idle Facilities and Equipment³⁹⁷

Costs of excess facilities are not allowable except immediately after a loss of a great workload.³⁹⁸ Idle workspace throughout a facility is usually allowable unless there is so much that the facility is deemed idle itself.³⁹⁹

The movement from older dirty facilities to newer cleaner facilities is a trend that is in the national interest to continue. Presently such a move would be against a defense contractor's best interests because not only will he have to start cleanup of the dirty facility but he will not be allowed to recover the costs of the dirty facility from the government. It is not uncommon for old facilities to become white elephants around a company's neck due to the environmental problems of the facility and the subsequent lack of buyers for such a facility. Without making these costs allowable, the contractor takes a direct hit on profit every time a new cleaner facility is created. Making these costs allowable when the contractor is moving to a new environmentally beneficial facility would be a large incentive for companies to do that.

d. Independent Research and Development, and Bid and Proposal

Costs⁴⁰⁰

Independent Research and Development (IR&D) costs are costs for basic research and development not sponsored by a government agency or not done pursuant to a

³⁹⁷ 48 C.F.R. § 31.205-17 (FAR) (1994).

³⁹⁸ *Id.*

³⁹⁹ 48 C.F.R. § 31.205-17(c) (FAR) (1994).

⁴⁰⁰ 48 C.F.R. § 31.205-18 (FAR) (1994).

government contract or grant.⁴⁰¹ Bid and Proposal costs (B&P) are the costs incurred in writing and formulating a proposal for work.⁴⁰² IR&D and B&P are allowable up to limits negotiated between the government and the contractor.⁴⁰³ DOD further limits these costs to the lesser of the agreed amount, the actual expenditures made, or the amount of these costs dedicated to researching/developing technology of interest to DOD.⁴⁰⁴ Of standing interest to DOD is technology for improving the environment.⁴⁰⁵ Above the limits, any of these costs become losses to the contractor.

IR&D is one of the main reasons that US companies stay technologically superior.⁴⁰⁶ It is very effective in establishing new technologies.⁴⁰⁷ It is exactly the effort needed to further environmental innovation and technology.⁴⁰⁸ Establishing subcategories of costs that would not be limited by the advance agreement or would have a very high ceiling in the advance agreement would foster increased IR&D and thus more environmental technological innovation.⁴⁰⁹

e. Interest and Other Financial Costs⁴¹⁰

Interest on borrowed money is generally unallowable.⁴¹¹ Environmental technology often is not pursued for lack of funding.⁴¹² Therefore, making interest on loans taken to

⁴⁰¹ 48 C.F.R. § 31.205-18(a) (FAR) (1994). Even though IR&D may be partially paid for by the government, the contractor retains all patent and technical data rights in any completed products.

⁴⁰² 48 C.F.R. § 31.205-18 (FAR) (1994).

⁴⁰³ The National Defense Authorization Act for Fiscal Year 1991, Pub. L. No. 101-510, § 824 (1991); 48 C.F.R. § 31.205-18 (FAR) (1994).

⁴⁰⁴ 48 C.F.R. § 231.205-18(c)(1)(i)(C) (DFARS) (1994).

⁴⁰⁵ *Id.*

⁴⁰⁶ Jonathan Blucher, AFSC/JAN Talking Paper, Jun. 30 1989. Located in Air Force Material Command Staff Judge Advocate's Office, Wright-Patterson AFB, OH.

⁴⁰⁷ *Id.*

⁴⁰⁸ *Id.*

⁴⁰⁹ *Id.*

⁴¹⁰ 48 C.F.R. § 31.205-20 (FAR) (1994).

⁴¹¹ *Id.*

⁴¹² H.R. REP. NO. 536, *supra* note 50, at 22.

capitalize environmental technology development allowable would seem to be a quick and easy incentive for government contractors to environmentally innovate.

f. Organization Costs⁴¹³

The costs of mergers, acquisitions, reorganizing, raising capital, or any defenses to the same are unallowable by law.⁴¹⁴ One way for a contractor to get a needed technology to enhance the environment may be to buy or merge with the business that holds the patent or the data rights to that technology. Such a merger will be more likely to happen if the substantial costs involved are paid partially by the government. This would take a change to the present law.

g. Precontract Costs⁴¹⁵

These are the costs that benefit a particular contract but are incurred prior to negotiations being finalized.⁴¹⁶ They are usually allowable if incurred in anticipation of award and are necessary to comply with the delivery schedule.⁴¹⁷ Contractors will often try to include costs that were incurred as an independent project or were IR&D costs. These costs would not be allowable. However, a flexible view towards allowing such costs, if made to further environmental technology (which would benefit the government agency), would seem to generally incentivize contractors to start off their research even without knowing they will be awarded a contract.

h. Depreciation of Capital Equipment⁴¹⁸

Depreciation is the amortization of the cost of the equipment to reflect the loss in value of the equipment as time passes. Though generally normal depreciation is allowable, there would be a great incentive to the further purchase of environmental benefiting

⁴¹³ 48 C.F.R. § 31.205-27 (FAR) (1994).

⁴¹⁴ 10 U.S.C. § 2324(E)(1)(K) (1994).

⁴¹⁵ 48 C.F.R. § 31.205-32 (FAR) (1994).

⁴¹⁶ *Id.*

⁴¹⁷ *Id.*

⁴¹⁸ 48 C.F.R. § 31.205-11 (FAR) (1994).

equipment if the contract could depreciate the equipment faster.⁴¹⁹ Another possibility would be to allow faster depreciation on equipment or facilities which need to be retired to allow for the acquisition of newer more environmentally friendly equipment.

i. Gains and Losses on Depreciable Property⁴²⁰

Normally gains and losses from the sale of equipment or facilities would be taken as a charge or credit to depreciation for that accounting period.⁴²¹ However, the FAR provides that gains and losses from "mass or extraordinary sales, retirements, or other disposition . . . shall be considered on a case-by-case basis."⁴²² This would seem to give the government leeway to use this provision to assist contractors to sell or transfer old facilities so that the contractor can move to newer more environmentally beneficial facilities.

j. Plant Reconversion Costs

These costs to restore a facility to the condition it was in prior to the government contract are usually not allowable.⁴²³ The FAR does allow some costs that are due to "special circumstances."⁴²⁴ Early disposition or modernizing of the plant due to environmental reasons are arguably the "special circumstances" that should would justify the allowability of those costs.⁴²⁵

4. Modification to Profit

Another opportunity to incentivize contractors is with an increase in profit. Though any contracting officer can do this with appropriate justification of adequate contractor risk and investment,⁴²⁶ it has been suggested that a change to the weighted guidelines would make this incentive more broad based and further supportive of individual contracting

⁴¹⁹ This is allowed in several states regarding a deduction against in-state taxes.

⁴²⁰ 48 C.F.R. § 31.205-16 (FAR) (1994).

⁴²¹ 48 C.F.R. § 31.205-16(a) (FAR) (1994).

⁴²² 48 C.F.R. § 31.205-16(e) (FAR) (1994).

⁴²³ 48 C.F.R. § 31.205-31 (FAR) (1994).

⁴²⁴ *Id.*

⁴²⁵ *Id.*

⁴²⁶ 48 C.F.R. § 15.905 (FAR) (1994).

officer's actions.⁴²⁷ The weighted guidelines are DOD's structured approach to developing a prenegotiation profit or fee objective on negotiated contracts.⁴²⁸ Similar structured approaches are required for all government agencies.⁴²⁹

Modification to profit differs from an award fee in that the change to the profit criteria rewards the development effort of the contractor rather than the successful innovation. The development effort would be only one factor to consider in determining a reasonable profit, while the award fee is based solely on the environmental innovation. This makes the modification to profit less effective, but also less expensive to the government.

5. Indemnification

In order for the government to get their contractors to become "risk-takers" (which is needed to foster environmental innovation and technology) the government must somehow lessen the large risk facing these contractors. This can be done directly by covering certain costs, increasing profits, or agreeing to repay money as discussed above. It can also mean that the government could indemnify the contractor from certain risks. "One factor that keeps government contractors from using innovative technology for site cleanup is lack of indemnification for long-term liability."⁴³⁰

Though indemnification is non-monetary in the first instance, it does represent a certain funding commitment and therefore should be considered a monetary incentive. In the government, this is especially true since any indemnification agreed to by an executive agency must be supported by law or by actual funds administratively committed.⁴³¹ Some of

⁴²⁷ The idea of modifying the weighted guidelines to increase the profit for environmental technology as an environmental incentive was suggested in the NSIC White Paper discussed at the Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit. Tenth Annual Judicial Conference of the United States Court of Appeals for the Federal Circuit, 146 F.R.D. 205 (1993).

⁴²⁸ 48 C.F.R. § 215.902 (DFARS) (1994).

⁴²⁹ 48 C.F.R. § 15.902(1) (FAR) (1994).

⁴³⁰ *Long-Term Liability: An Obstacle to Site Cleanup*, 102 CHEMICAL ENGINEERING 37 (1995).

⁴³¹ Failure to do this is a violation of the Anti-Deficiency Act, 31 U.S.C. § 1341(a) (1994).

the laws that the government has used to support environmental indemnification are 10 U.S.C. § 2354, for unusually hazardous research and development work and Public Law 85-804, Extraordinary Contractual Relief.⁴³² Generally, government officials will find it very hard to obtain indemnification for their contractors because past government indemnification losses related to CERCLA claims have made government officials fearful of indemnifying anything.⁴³³ However, indemnifying innovative beyond-compliance efforts is well supported by the President and may not be as hard a task if the an agency Secretary or administrator can be convinced.⁴³⁴

Indemnification is not a favored incentive tactic from the government's side.⁴³⁵ The bureaucracy of the government is more comfortable with actual payment of funds than contingent liabilities.⁴³⁶ Even though the actual money outlay may be much less with the latter, the funding laws in place make mistakes with contingent liabilities crimes.⁴³⁷ Secondly, actually finding the funds to cover the contingency is always hard. Third, the government is too sensitive with all the CERCLA liabilities out there to easily agree to indemnify anyone.⁴³⁸

⁴³² Indemnification may be found under the "Residual Powers" provisions, 48 C.F.R. § 50.400 (FAR) (1994) or under the "Special Procedures for unusually hazardous or nuclear risks", 48 C.F.R. § 50.403 (FAR) (1994). Indemnification based on these provisions must be approved by the Secretary of the Agency concerned.

⁴³³ Bartman, *supra* note 188, at 383. "In the wake of the Rocky Flats prosecution, the government -- particularly the Department of Energy, . . . has sharply limited the availability of indemnification for environmental fines." *Id.*

⁴³⁴ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45.

⁴³⁵ Bartman, *supra* note 188, at 383.

⁴³⁶ See O. S. Hiestand, *Another Look at Federal Contract Indemnification*, THE PROCUREMENT LAWYER, Summer 1996, at 6.

⁴³⁷ Anti-Deficiency Act, 31 U.S.C. § 1341(a) (1994).

⁴³⁸ EPA is set against this as shown by their GOCO rule which provides that EPA will ignore any indemnification agreement, as well as, their limited 119 rule. Bartman, *supra* note 188, at 383.

Contractors do not understand the government's hesitation as they perceive this incentive as equally good for the government.⁴³⁹ They see it as less cash being spent by the government in the indemnified contract as the government extends its self insurance program to the contractor. This is better for the taxpayer. The government can thus avoid reimbursing the contractor's high insurance premiums or paying into the contractor's self insurance pool. Though contractors are willing to assume losses to the system, they do not want to open their company up to staggering liabilities that might result from CERCLA related innovative techniques, for example.

B. Non-monetary

1. Waivers

There are also ways to incentivize contractors without relying on money. One way is to allow changes to requirements or waivers to requirements. This incentive is based on the fact that in a major government contract the government requires hundreds of thousands of discrete requirements. By changing some of these requirements or by eliminating some that are not essential to the core purpose of the contract, the contractor can possibly achieve large pollution reductions.⁴⁴⁰ If the government has required a, b, c, and d, the contractor may suggest providing a, b, c, and 1/2 d along with a 200 ton a year pollution reduction. The contracting officer cannot reduce government requirements without corresponding consideration, however pollution reduction innovations that assist meeting government and agency goals would be "adequate" consideration.⁴⁴¹ Whether the consideration is

⁴³⁹ The ABA has recommended for many years the adoption of a standard government indemnification provision that would cover public liability in excess of "reasonably available insurance." Hiestand, *supra* note 436.

⁴⁴⁰ The contracting officer can not reduce requirements below minimum government needs but many times the government has adopted detailed specifications that exceed the minimum needs of the government. 48 C.F.R. § 10.004(a) (FAR) (1994).

⁴⁴¹ CIBINIC & NASH, ADMINISTRATION, *supra* note 337, at 11. "Adequate" consideration is the minimum necessary value, promise of value, or promise of withholding a legal right that makes a contract legally enforceable.

"sufficient" to justify the performance reduction is a determination properly left to the contracting officer.⁴⁴²

Basically this incentive is limited to larger complex procurements. It should be limited to beyond-compliance efforts and not making bare compliance easier on the contractor. Contractors should be enthused by this as it often could lead to more productive work and could allow them to move away from strict contract compliance without breaching the contract. The government will enjoy not having to fund these efforts, but again contracting personnel may be hesitant to implement this for fear of being second-guessed by others in the government less concerned with the environment.⁴⁴³

2. Evaluation Criteria in Contract Source Selection

"Source selection" is the formal or informal method of choosing a contractor from a competition to perform a certain governmental function.⁴⁴⁴ Evaluation criteria are the main concepts analyzed by the government to determine who will be the best contractor.⁴⁴⁵ Evaluation criteria may consist of cost elements alone, or they may be a combination of elements including, at least, quality and cost.⁴⁴⁶ Recently there has been a large push for "best value" procurements.⁴⁴⁷ These procurements analyze a number of evaluation criteria to determine the best contractor for a certain job.⁴⁴⁸ These could be written as technical

⁴⁴² *Id.* "Sufficient" consideration is that amount of consideration roughly equivalent to the government's value given as part of a contract. Each government contract must have "adequate" consideration, which goes to the legality of the contract, and "sufficient" consideration since a contracting officer cannot give away government property, services, or rights.

⁴⁴³ DeMayo testimony, *supra* note 196. ["Indeed, under the current system where contracting officials judgments are routinely second-guessed and challenged, it is understandable that few are willing to exercise flexibility at the risk of shortening their careers. This culture must be changed."] *Id.*

⁴⁴⁴ 48 C.F.R. § 15.600 (FAR) (1994).

⁴⁴⁵ 48 C.F.R. § 15.605 (FAR) (1994).

⁴⁴⁶ 48 C.F.R. § 15.605(b) (FAR) (1994).

⁴⁴⁷ Roan, *supra* note 272.

⁴⁴⁸ 48 C.F.R. § 15.605(c) (FAR) (1994).

evaluation criteria, that measure an offeror's proposed plan of environmental innovation, and/or the solicitation can measure environmental innovation through the past performance of the offerors. Measuring past performance will reward offerors who environmentally innovate as a regular business practice. Environmental concerns can and should become an evaluation factor in all source selections but especially in "best value" procurements.⁴⁴⁹ DOD is required to include environmental technical criteria in all their source selections.⁴⁵⁰ "The goal at DOD is to integrate environmental, safety and health concerns into the acquisition process in a way so that these concerns are considered up front in evaluating Cost-Schedule Performance tradeoffs and not as a separate requirement."⁴⁵¹

This idea of judging a contractor by their environmentally friendly products, innovations or proposals is related to the idea of "green" labeling that is becoming common today.⁴⁵² Green labeling is a company's effort at characterizing their product as environmentally friendly and therefore that it should be bought versus the competition. This is exactly the type of sales pitch that is being brought to the government and the government should be seeking. For example, Green Seal, one of the main US labelers has entered negotiations with the Office of the Federal Environmental Executive to certify certain recycled products so that the government procurement agencies can rely on their symbol to buy those products.⁴⁵³ Such a concern over a company's environmental focus can help a company get a contract and it can be linked to a company's environmental management efforts.⁴⁵⁴

⁴⁴⁹ U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 16.

⁴⁵⁰ Department of Defense Instruction 5000.2.

⁴⁵¹ Goodman, *supra* note 129.

⁴⁵² Orts, *supra* note 4, at 1246.

⁴⁵³ Green Seal sets general standards for products based on an assessment of multiple environmental attributes. Green Seal works with environmental groups and relies on Underwriters Laboratories, Inc. for testing. *Id.*

⁴⁵⁴ *Id.*

III. *Tax Incentives*

The use of tax incentives to motivate companies and individuals has long been standard operating procedure for federal and state legislatures. They apply to business in general and not just government contractors.⁴⁵⁵ The use of such motivation to benefit the environment we live in has been called for by many commentators and environmentalists but is only recently gaining increased acceptance with this country's legislatures.⁴⁵⁶ This part of the paper will look at a limited part of that debate. Specifically, we will look at the granting of positive tax incentives that reduce the present tax burden through the use of credits, abatements or similar tax devices. Such tax incentives will only be analyzed inasmuch as they are designed to incentivize voluntary behavior over and above required actions. This voluntary behavior may take the form of pollution prevention, clean-up, or innovation. The use of positive tax incentives to offset expenses incurred in meeting the requirements of present law and regulation are outside the scope of this discussion.⁴⁵⁷ Positive tax incentives are viable options that governments can use to incentivize greater environmental benefits.⁴⁵⁸ However, these types of incentives have certain benefits (and downsides) over other economic and tax incentives that should be considered by the policy maker. One of their greatest attributes is the flexibility inherent within them in that they can attach to a variety of types of taxes and can incentivize a variety of environmentally beneficial behavior. Tax

⁴⁵⁵ Though there is no reason why a separate government contractor tax break cannot exist. For example, a tax break on income derived from the government could be possible.

⁴⁵⁶ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE (George R. Farrah ed., 1993).

⁴⁵⁷ An example of this is the proposed Environmental Tax Credit within recent agriculture legislation. *On The Federal Tax Code and its Effects on Farmers, Ranchers, and Rural Communities: Hearings Before the General Farm Commodities Subcommittee of the U.S. House Committee on Agriculture*, 104th Cong. (1995) (statement of Leland Swenson, President, National Farmers Union) available in Westlaw, 1995 WL 73005. ["Environmental Tax Credits--Our membership supports legislation which would provide for income tax credits for purchases of machinery and equipment bought primarily to comply with federal, state or local environmental laws."]

⁴⁵⁸ See generally Don Fullerton, *Why Have Separate Environmental Taxes*, NATIONAL BUREAU OF ECONOMIC RESEARCH WORKING PAPER 5380, 11 (1995).

incentives are not a panacea for every environmental problem, but they can be an effective part of a legislative "package" solution.

A. Use of Taxes as Incentives

Taxation is and always has been a "primary instrument of social policy."⁴⁵⁹ Tax deductions and credits are especially note-worthy indicators of a government's social policy.⁴⁶⁰ Home ownership, charitable contributions, marriage, and child-bearing are all encouraged through our tax laws by deductions and exemptions.⁴⁶¹ Therefore, using tax deductions and credits to incentivize the elimination of pollution and the protection of aesthetic and biodiverse elements of our environment is consistent with these other subjects of tax incentivization. The improvement and protection of the environment is a great social debate in this country and thus is ripe for the consideration of tax incentives.⁴⁶²

B. Tax Incentives v. Other Incentives

Some commentators have opined that tax incentives are not as effective as other types of market based incentives.⁴⁶³ The reality is that different types of incentives have different effects and some types are better for some situations than other types. This is just as true for command and control regulations and laws. Market incentives are not always the best way to effect needed changes. As noted earlier, many command and control type laws and regulations have effected great environmental changes in remarkable short periods of time.⁴⁶⁴ Because the tax incentives are based on currency units, they are more fungible and

⁴⁵⁹ EDWARD M. MEYERS & JOHN J. MUSIAL, URBAN INCENTIVE TAX CREDITS: A SELF-CORRECTING STRATEGY TO REBUILD CENTRAL CITIES 123 (1974).

⁴⁶⁰ *Id.* at 125.

⁴⁶¹ *Id.*

⁴⁶² *Spotlight Story Clinton: Prez Rails Against GOP, Pushes Brownfields Plan*, AMERICAN POLITICAL NETWORK GREENWIRE, Mar. 12, 1996, available in Westlaw [hereinafter *Clinton*].

⁴⁶³ Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

⁴⁶⁴ Breger, *supra* note 17, at 463. Tax incentives tend to have a less certain effect on the quantity of emissions than other types of incentives. The cost of emission controls is known and that gives business a better bottom line to figure into their pricing methodologies. This may be very important, as many experts see the larger threat to effective systems of pollution

are more easily accepted into the business systems in use today.⁴⁶⁵ They are also more likely to evolve over time to maximize benefits of whatever system is used. Many market-based systems are bureaucratically heavy, like the present command and control systems, and cannot be changed easily. Tax levels can be more easily adjusted up and down to effect the greatest benefits.⁴⁶⁶

C. Taxes v. Fees

There are two critical differentiations needed before we can center on our target. The first is the difference between "taxes" and "fees." Generally, "environmental fees" reflect actual administrative expenses needing reimbursement. "Environmental taxes" should not equal the bureaucratic costs caused by the pollution even though the tax may accurately track the cost to society caused by the pollution.⁴⁶⁷ Though, this is the general rule, the actual application and the universal acceptance of this rule is subject to great debate.⁴⁶⁸ However, the differentiation between what is a tax and what is a fee is not critical for our analysis here.⁴⁶⁹

avoidance is overwhelming or uncertain costs. OECD, *supra* note 213, at 26.

⁴⁶⁵ *Id.* at 26-27.

⁴⁶⁶ *Id.* at 27.

⁴⁶⁷ This idea of matching the cost to society with the tax to be imposed on the polluter was first introduced by Pigou in 1957. Robert W. Hahn and Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era From an Old Idea?*, 18 *ECOLOGY L.Q.* 1 (1991). Finding that value is one of the hardest aspects of tax incentives and this difficulty is the basis for one of the harshest criticisms of the tax incentive system. *Id.* However, this is only a problem when the economic well-being of the industries concerned is of equal priority to the health and welfare of the public. In most cases, erring on the side of over-taxing will better protect the environment even if it injures the industry. The reality is that the industry chooses to be involved with this pollution-laden business and must accept the risks. This ideology is much less draconian to business than the retroactive application of CERCLA with its huge liabilities.

⁴⁶⁸ See generally Hahn & Stavins, *id.*; and Orts, *supra* note 4.

⁴⁶⁹ It is critical in sovereign immunity cases where laws have waived sovereign immunity for "fees" but not "taxes." For example see *U.S. v. South Coast Air Quality Management District*, 748 F. Supp. 732 (M.D. Ca. 1990).

D. Positive Environmental Taxation Devices versus Negative Environmental Taxation Devices: Pros and Cons

The second differentiation is more critical to this analysis. This is the difference between using "Positive Taxation Incentives" and "Negative Taxation Incentives."⁴⁷⁰

1. Negative Environmental Taxation Devices - Environmental Taxes

This type of taxation constitutes the fixing of a charge to a unit of pollution, material, or action to penalize the action deemed to be environmentally harmful. This taxation is more prevalent than "positive tax incentives." There are several well known examples of this type of taxation including the Ozone Depleting Chemicals Tax, Chemical Feedstock Tax, and Petroleum Tax.⁴⁷¹

The main benefit of this type of special taxation is its power to discourage harmful environmental actions.⁴⁷² Examples of this benefit is inherent in the tax on oil spills in the state of Washington,⁴⁷³ the tax on the release of hazardous substances in Washington and Indiana,⁴⁷⁴ and the tax on nuclear waste disposal in Washington state.⁴⁷⁵ Some studies have

⁴⁷⁰ The use of the "positive" and "negative" terminology here is not universally accepted. In fact, a number of articles use the same terminology with the exact *opposite* meanings attached. For example see OECD, *supra* note 213, at 41. However, the reason for this differentiation in terminology comes from the perspective of the writer. Businesses see new taxes as "negative" and less taxes as "positive," while governmental and environmental groups see more taxes as positive and less taxes as negative. Since the focus of this article is exploring the incentive aspects of less taxes on businesses we have taken a pro-business perspective and thus less taxes is seen as positive and environmental taxes as negative.

⁴⁷¹ Fullerton, *supra* note 458.

⁴⁷² ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456.

⁴⁷³ *Id.* at 313-314. [Illegal releases of oil are taxed based on the quantity of oil released. This tax or fee is in addition to other applicable laws like the Oil Protection Act of 1990, 33 U.S.C.A. § 2701 - 2761 (1995) or the Federal Water Pollution Control Act, 33 U.S.C.A. § 1251 - 1387 (1995)]

⁴⁷⁴ *Id.* at 315-316. [Illegal releases of hazardous substances are taxed based on the quantity of substances released. This tax or fee is in addition to other applicable laws like the CERCLA of 1980, 42 U.S.C.A. § 9601 - 9675 (1995) or the Solid Waste Disposal Act, 42 USCA § 6901 - 6992k.]

⁴⁷⁵ *Id.* at 316-317.

declared, however, that on the federal level, tax laws have not been designed to deter polluting but rather are designed merely to generate income for cleanup purposes.⁴⁷⁶ This is seen as paying to pollute rather than avoiding the pollution initially.

A second benefit to environmental taxes is the increase in revenue. This additional revenue is used in different ways, depending on the preferences of the implementing body. It can assist in paying for related or unrelated environmental cleanup. Examples of this include a number of federal trust funds including funds for Black Lung Disability, Airport and Airways, Highways, Aquatic Resources, Inland Waterways, Hazardous Substances, Leaking Underground Storage Tanks, and Oil Spill Liability.⁴⁷⁷ This type of tax scenario has been used by the states as well.⁴⁷⁸ A portion of Washington's sales tax is earmarked for litter clean-up.⁴⁷⁹ Washington's garbage tax funds landfill projects.⁴⁸⁰ Massachusetts has a similar provision.⁴⁸¹ Several states have petroleum taxes and underground storage tank taxes similar to Federal provisions.⁴⁸² Massachusetts taxes toxic users and hazardous waste transporters and uses these funds to reduce toxics and hazardous waste respectively.⁴⁸³ California, in fact, funds a large part of their environmental budget from environmental tax revenue.⁴⁸⁴ Additionally, California, like other states, collects taxes to fund special programs like the Bay and Estuary Cleanup Program.⁴⁸⁵

⁴⁷⁶ *Id.* at 313-317.

⁴⁷⁷ Not all of these funds are financed by pollution taxes. Some may be taxes on the industry primarily responsible for the pollution. *Id.* at 278.

⁴⁷⁸ *Id.* at 309 - 332.

⁴⁷⁹ *Id.* [These taxes fund certain expense accounts earmarked for clean-up, landfill, oversight, or construction, as noted.]

⁴⁸⁰ *Id.*

⁴⁸¹ *Id.*

⁴⁸² *Id.*

⁴⁸³ *Id.*

⁴⁸⁴ *Id.* at 356 - 357.

⁴⁸⁵ *Id.* at 394. Another use for this additional revenue is paying down the budget deficit. *Environmental Protection: Implications of Using Pollution Taxes to Supplement Regulation*, 199 GENERAL ACCOUNTING OFFICE REPORTS & TESTIMONY 3 (1993), available at 1993 Westlaw 2658590 [hereinafter GAO]. This option has little support probably because of the

Direct taxes have their downside as well. First, they are a hard sell politically.⁴⁸⁶ Second, they create a need for accurate monitoring⁴⁸⁷ and a bureaucracy to oversee and keep track of them.⁴⁸⁸ Of course, the monitoring involved may be less than other present environmental monitoring requirements and the bureaucracy needed should be less than the bureaucracy attached to command and control regulations. Another political problem with taxes is the fact that some industries or consumers will be hurt by these taxes - and they have political influence.⁴⁸⁹ Targeting of certain whole industries for taxation has been a poor deterrent because of the industry's ability to recoup the added costs involved by spreading the added costs through all end products marketed, without detriment to their profit margin.⁴⁹⁰ The consumer pays the tax and administrative costs and there is no or little incentive on the industry to reduce pollution.

2. Positive Environmental Taxation Devices - Tax Exemptions, Credits, Deductions, etc.

This reduction of other taxes in exchange for taking or avoiding actions above and beyond those actions required by regulations and laws must be environmentally meritorious.

impression that such a use would send the badly needed funds down the deficit black hole. However, the political expediency of using these environmental taxes to decrease the collection of alternate taxes is considered a strong reason to have environmental taxes. GAO, *supra* note 485; This ratio is not one for one due to the increased transaction costs. A. Lans Bovenberg and Lawrence H. Goulder, *Optimal Environmental Taxation in the Presence of Other Taxes: General Equilibrium Analyses*, NATIONAL BUREAU OF ECONOMIC RESEARCH WORKING PAPER 4897, 16 (1994).

⁴⁸⁶ GAO, *supra* note 485, at 94; ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 355; Not all sources agree with this downside. Some say that it is an easy sell. See ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *Id.* at 277.

⁴⁸⁷ GAO, *supra* note 485.

⁴⁸⁸ OECD, *supra* note 208, at 112.

⁴⁸⁹ *Id.* at 103.

⁴⁹⁰ Fullerton, *supra* note 458, at 28. These taxes have high compliance costs thus further adding to public costs without public gain. Compliance costs are the administrative costs the company must pay (manpower, time, computer tracking) to track and pass-on the collected taxes. These compliance costs are also passed onto the consumer.

The good side of this type of incentive is that it can eliminate or minimize the downside of other tax schemes that effect environmental performance. For example, in California there is an exemption from the Sacramento Motor Vehicles Fee for low emission vehicles.⁴⁹¹ This type of positive incentive tax also discourages harmful environmental actions⁴⁹² and provides funds to industry for clean-up efforts.⁴⁹³ Possibly more important is the motivational goal it represents for industries able to benefit from it.⁴⁹⁴ Because this type of incentive is a tax reduction it is easier to sell politically.⁴⁹⁵

There are five major problems with this incentive approach. First, any tax cut means a loss of revenue. Of course, this could potentially be offset by creating an environmental tax on other conduct.⁴⁹⁶ In fact some commentators believe that a combination or "package-deal" of new taxes and tax credits or abatements are the best solution when tax incentives are the most effective way to resolve a pollution problem.⁴⁹⁷ Package deals have a lot of inbred flexibility and usually will cancel out most of the bad points each type of incentive may present on their own.⁴⁹⁸

The second problem is that the use of positive tax incentives are tax dependent. This means that the monetary incentive for any particular individual or company is limited to the amount of taxes otherwise payable. For companies that already have little tax liability this

⁴⁹¹ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 388.

⁴⁹² OECD, *supra* note 208, at 109.

⁴⁹³ By not having to pay a tax, the company retains those funds which can then be used for environmental clean-up or innovation.

⁴⁹⁴ *Id.* at 24.

⁴⁹⁵ RICHARD A. GAINES & SANFORD E. WESTIN, TAXATION FOR ENVIRONMENTAL PROTECTION 4-7 (1991), reviewed in 23 ENVTL. L.J. ("Fiscal measures can be used to modify behavior through either the 'stick' of taxing undesirable activities more heavily or the 'carrot' of tax savings for desirable activities. Legislators are understandably more comfortable granting tax subsidies than imposing tax increases.")

⁴⁹⁶ See GAO, *supra* note 485.

⁴⁹⁷ Adam Chase, *The Efficiency Benefits of "Green Taxes": A Tribute to Senator John Heinz*, 11 UCLA J. ENVTL. L. & POL'Y (1992).

⁴⁹⁸ *Id.*

incentive loses its motivational ability.⁴⁹⁹ The flexibility of tax incentives, at least at the state level, allows policy makers to avoid this problem since the tax incentive can be attached to an array of various taxes. Of course, the incentive would have to be applied non-discriminatorily and a particular company that is out of "sync" as to the taxes it pays may not get as great of an incentive as other businesses in their class.

A third problem is what is known as the "race to the bottom." In other contexts, states and municipalities have "raced" to give greater and greater tax breaks - often exceeding any good resulting from the sought after transaction.⁵⁰⁰ So far, however, tax reductions for environmental purposes are not as numerous or aggressive as those for relocating businesses and or sports teams and are thus unlikely to be subject to that problem.

Other problems include a need for a baseline and "concealed protection" for polluters. In order to give tax breaks for pollution reduction a starting line has to be established from which any benefits would accrue.⁵⁰¹ Since such a baseline would have to be case-by-case in most circumstances, the burden of the initial designation would be substantial. Even once the baseline is established, accurate monitoring would still be needed.⁵⁰² "Concealed protection" for polluters involves the concern that polluters will achieve benefits for cleaning up the pollution they created. This can lead to a self-fulfilling clean-up loop to achieve greater and greater tax benefits.⁵⁰³ Though this is a danger that affronts the sensibilities of most people the reality is that there are a tremendous number of "dirty" companies that polluted unknowingly or in accordance with the industry standard.⁵⁰⁴

⁴⁹⁹ It is possible though, for the credit or incentive to exceed the tax liability. The Earned Income Credit, Internal Revenue § 32, is such a plan.

⁵⁰⁰ See *Charter Township of Ypsilanti v. General Motors Corp.*, 506 N.W.2d 556 (Mich. Ct. App. 1993).

⁵⁰¹ OECD, *supra* note 208.

⁵⁰² GAO, *supra* note 485.

⁵⁰³ OECD, *supra* note 208, at 25; Chase, *supra* note 497.

⁵⁰⁴ This was recognized in many US laws where old industries were allowed to phase out. See for example, the Clean Air Act New Source Performance Standards, 42 U.S.C. § 7411 (1994).

Certainly tax benefits should not be given in individual fact-specific situations where the company involved is an acknowledged "bad actor."

This leads in to one of the other problems with a tax credit/abatement system - the violation of the United Nations Organization of Economic Cooperation and Development (OECD) adopted "Polluter Pays Principle."⁵⁰⁵ "Polluter Pays" is the concept that the tax objective is to collect appropriate amounts from the parties responsible for the pollution. However, some studies have argued that such Polluter Pays taxes are ineffective so far in actual practice due to the cost spreading techniques of huge corporations.⁵⁰⁶ Polluter Pays becomes, in effect, "Public Pays" thus rendering the tax marginally effective.⁵⁰⁷

3. Energy Taxes

Included in most discussions related to positive tax incentives are the number of tax incentives offered at both the state and federal level for the reduction in use of fossil fuels.⁵⁰⁸ Though reducing fossil fuels has a good environmental effect⁵⁰⁹ the primary

⁵⁰⁵ OECD, *supra* note 208, at 25.

⁵⁰⁶ Fullerton, *supra* note 458, at 28.

⁵⁰⁷ Though the pollution may be caused by a particular company, there are many companies that are still in "transition." They polluted or installed equipment and procedures that continue to pollute based on the norms and legalities of the time of installation. Until these businesses and technologies are able to transition to more environment friendly systems, penalizing them is prejudicial to their interests in comparison to other businesses lucky enough to not presently be considered a polluter. The US Congress understands this problem and has attempted to factor in a transition plan in almost every major environmental statute. For example, the Clean Air Act New Source Performance Standards, 42 U.S.C. § 7411 (1994). Positive tax incentives, however, accelerate the transition process so that polluting companies can catch-up with the luckier companies who do not face such environmental liabilities. Once a level playing field has been achieved, the Polluter Pays principle can be applied uniformly and vigorously.

⁵⁰⁸ There are a number of federal tax incentives for Alcohol Fuels, Solar Energy, Natural Gas, etc. ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 229-276. There are many state programs as well. For example, Massachusetts offers a property tax exemption, a corporate excise tax deduction, a sales and use tax exemption, and a residential credit for solar or wind powered devices. *Id.* at 319-321.

⁵⁰⁹ The polluting effect of fossil fuels are well known and include global warming, acid rain, smog, and major air pollution of our major urban areas.

purpose of these incentives are usually not the preservation of the environment but rather the reduction in our overreliance on fossil fuels for energy.⁵¹⁰ There are several other types of taxes, the primary purpose of which is not the reduction of pollution, that have the side effect of lower emissions.⁵¹¹

B. Susceptible Taxation

Almost any tax imposed can be susceptible to use in granting positive tax incentives and there are a number of taxes that are in fact used. At the national level, both Individual Income Taxes and Corporate Income Taxes are presently used as the base from which the incentives can be given. For example, the Internal Revenue Code § 194 provides for the accelerated depreciation of reforestation expenses on private timberlands and Internal Revenue Code § 48(b)(1) provides a 10% credit for those same expenses.⁵¹² A deduction for certified pollution control facilities amortization is permitted under Internal Revenue Code § 169. That is more favorable to the taxpayer than normal depreciation.⁵¹³ A final example is Internal Revenue Code § 48(q) which provides for a Rehabilitation Tax Credit for Historic Preservation. It is a two-tiered credit consisting of a twenty percent credit for certified, historic structures (the "Historic Credit") and a ten percent credit for structures originally placed in service before 1936 other than certified historic structures (the "Older Structure Credit").⁵¹⁴

⁵¹⁰ *e.g. Id.*

⁵¹¹ *Id.* An analysis of those tax laws, as well as the similar energy tax laws are outside the scope of this paper.

⁵¹² *Id.* at 258. The expenses that are subject to both sections are capped at \$10,000.

⁵¹³ This deduction is available to a "new identifiable treatment facility which is used, in connection with a plant or other property in operation before January 1, 1976, to abate or control water or atmospheric pollution or contamination by removing, altering, disposing, storing, or preventing the creation or emission of pollutants, contaminants, wastes, or heat" and which is in certified compliance with all state and federal regulations. I.R.C. § 169(d)(1).

⁵¹⁴ Carolyn E. Cheverine and Charlotte M. Hayes, *Rehabilitation Tax Credit: Does It Still Provide Incentives?*, 10 VA. TAX. REV. 167 (1990).

At the state level almost any type of tax assessed is susceptible to having a positive tax incentive related to it. State income taxes, both individual and corporate, are prime targets for incentives. In Utah, income tax credits are given for the cost of projects to reduce environmental emissions or obtain other environmental benefits.⁵¹⁵ Oregon offers income tax credits for reforestation of certain lands,⁵¹⁶ installation of pollution control facilities,⁵¹⁷ and alternative energy devices and energy conservation facilities.⁵¹⁸ Ohio and Delaware are both considering substantial credits for those businesses cleaning up contaminated real estate.⁵¹⁹

In addition to income taxes, sales and use taxes can be used to craft an incentive plan. For example, Arkansas gives an exemption from use taxes for machinery and equipment required by state law or regulations to be installed and utilized by manufacturing facilities to prevent or reduce air and/or water pollution.⁵²⁰ Another state that gives exemptions for use taxes is Louisiana. California has a broad spectrum of environmental taxes and positive tax incentives including the Sacramento Motor Vehicles Fee (a sales tax) exemption for low emission vehicles.⁵²¹

Environmental taxes may also be subject to exemption. New Jersey exempted from taxation "waste products resulting from the operation of a resource recovery facility."⁵²² New Jersey also imposed three new taxes on the disposal of solid waste at sanitary landfills,

⁵¹⁵ UTAH CODE §§ 59-7-608 and 59-10-130 (1995).

⁵¹⁶ OREGON STATUTES § 316.094.

⁵¹⁷ OREGON STATUTES § 316.097.

⁵¹⁸ OREGON STATUTES §§ 316.116 and 316.140.

⁵¹⁹ John Chalfant, *House Considers Cleanup Credits*, DAYTON DAILY NEWS, Feb. 12, 1996 at B4; DELAWARE CODE, Title 3, § 921 (1995).

⁵²⁰ ARK. STAT. ANN. § 84-3106 (D)(2)(d), *cited in* Heath v. Research-Cottrell, Inc., 258 Ark. 813; 529 S.W.2d 336 (1975).

⁵²¹ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 388.

⁵²² NEW JERSEY STAT. ANN. § 13:1E-138 a, b and c.

but exempts recycled or recovered materials.⁵²³ California also grants exemptions from operator and quarterly solid waste fees for recycled waste.⁵²⁴

The largest area for the crafting of state positive tax incentives has been real estate (e.g. property or *ad valorem*) taxes. Alabama provides that certain enumerated property is given an exemption from this type of taxation.⁵²⁵ The exemption applies to:

"All devices, facilities or structures, and all identifiable components thereof or materials for use therein, acquired or constructed primarily for the control, reduction or elimination of air or water pollution."⁵²⁶

Massachusetts grants an exemption for any pollution reduction or treatment property or facilities. In fact, this exemption covers equipment and other personal property taxes as well.⁵²⁷ Minnesota has a property tax exemption for undisturbed wetlands and ungrazed native prairie.⁵²⁸ Delaware is studying a proposal that would give substantial tax credits for clean-up of real estate.⁵²⁹ Many jurisdictions look at property taxes due to their present familiarity with property tax breaks used to entice industry and new jobs to the area.⁵³⁰

C. Tax Incentive Forms

Positive tax incentives can take a number of forms, the details of which will decide the power of the incentive to coerce the polluter. The predominant incentive and the one most favored by industry are tax credits. They tend to be popular and effective because

⁵²³ *Id.* citing New Jersey Stat. Ann. § 13:1E-138.

⁵²⁴ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 395.

⁵²⁵ ALABAMA CODE, § 40-9-1 (20) (1975), *cited in* Chemical Waste Management, Inc. v. State of Alabama, et al., 512 So. 2d 115 (Ct. App. 1987).

⁵²⁶ *Id.*

⁵²⁷ MASS. GENERAL LAWS Ch. 59 §5 - 44, *cited in* The Henry Perkins Company v. Board of Assessors of Bridgewater, 377 Mass. 117; 384 N.E.2d 1241 (S.J.C. 1979).

⁵²⁸ Note, *Report Links Changes in Tax Codes to Protection of Species, Habitat*, BNA TAX UPDATES, July 13, 1995.

⁵²⁹ DELAWARE CODE, Title 3, § 921 (1995).

⁵³⁰ See Ypsilanti, 506 N.W.2d 556; Peter Martek, *Town Plans to Offer Incentives to Attract, Retain Businesses*, HARTFORD COURANT, Jan. 22, 1996, at B3.

credits are actual dollar-for-dollar reductions in tax liability. Credits have been used on both the state⁵³¹ and federal level.⁵³² Some of the implementation details of these credits may downgrade the coercive capacity of these incentives by restricting their application.⁵³³

Accelerated depreciation, exemptions, and deductions are all similar positive tax incentives in that each represents a decrease in the taxable income. Accelerated depreciation allows for a special categorization of certain real or personal property where the cost of the property is deducted from the polluter's taxable income over a limited period of years. It is, in effect, a specialized deduction that would normally be counted towards the total of all deductions if the tax used is an income tax. Examples of this type of incentive exists on both the state and federal levels.⁵³⁴ Deductions directly reduce the polluter's taxable income subject to the deduction rules limitations and caps.⁵³⁵ Exemptions are similar reductions of taxable income but are not usually tied down with limitations and caps. Therefore, they can

⁵³¹ For example, Utah gives income tax credits for the cost of projects to reduce environmental emissions or other environmental benefits. UTAH CODE §§ 59-7-608 and 59-10-130 (1995) California also offers a tax credit for the cost of recycling equipment and a credit for the cost of low emission vehicles. ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 357. Oregon offers income tax credits for reforestation of certain lands, OR. REV. STAT. § 316.094; installation of pollution control facilities, OR. REV. STAT. § 316.097; and alternative energy devices and energy conservation facilities, OR. REV. STAT. § 316.116 and 316.140. Ohio is considering substantial credits for those businesses cleaning up contaminated real estate. Chalfant, *supra* note 519.

⁵³² Examples include the various energy tax credits; I.R.C. § 48(q) which provides for a Rehabilitation Tax Credit for Historic Preservation; I.R.C. § 48(b)(1) which is the Reforestation Credit; and I.R.C. § 30, the electric vehicle credit.

⁵³³ For example, I.R.C. § 48(b)(1), Reforestation Credit, is an incentive to promote reforestation on private timberlands in the amount of 10% of qualifying reforestation expenditures which are limited to \$10,000 per year. Expenditures must qualify for amortization under § 194. The credit is also subject to the business energy credit cap. Qualifying expenses are specifically limited. ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456.

⁵³⁴ For example, I.R.C. §§ 169 and 194 and California's rapid amortization of pollution control facilities. ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 357.

⁵³⁵ An example of deductions is described in Clinton, *supra* note 462.

potentially have a greater impact on taxes paid. Exemptions for types of taxes other than income taxes excludes a unit of taxable property from the taxable base. This avoids entirely the taxation on that portion of property. California has established several tax exemptions including an exemption for low emission vehicles out of the Sacramento Motor Vehicles Fee mentioned earlier and an exemption from the normal operator and quarterly solid waste fees for the volume of recycled waste separated and processed.⁵³⁶

Other types of positive tax incentives include abatements and refunds. Abatements are putting an entire tax or a portion of a tax on hold for a period of time. This is common among the industry incentives towns offer to businesses.⁵³⁷ It usually applies to property taxes. Refunds come about when the tax is already collected. In contract terms, they are a response to a "condition subsequent" to the collection of the tax. If certain specified conduct happens the government will refund the entire tax or a portion of the tax collected.⁵³⁸

An interesting proposal regarding an environmental incentive comes from Louisiana. That state has had an industry tax credit for years that lowers taxes for businesses operating facilities within the state of Louisiana. This credit has added to the profits of Louisiana's oil and gas industry. There have been several proposals to change this law to require environmental compliance as a threshold requirement to the business being considered for this tax credit.⁵³⁹

D. Survey of Positive Taxation Incentives

What actions can be incentivized by positive tax devices? We have reviewed what taxes can be lowered and what devices can be used to lower those taxes. Now we will look at the actions or conduct in need of incentivization. Congress has long recognized the fact

⁵³⁶ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 388, 395.

⁵³⁷ See Ypsilanti, 506 N.W.2d 556; Martek, *supra* note 530.

⁵³⁸ OECD, *supra* note 208, at 102.

⁵³⁹ Oliver A. Houck, *This Side of Heresy: Conditioning Louisiana's Ten-Year Industrial Tax Exemption Upon Compliance with Environmental Laws*, 61 TUL. L. REV. 289 (1986).

that the states are the laboratories of the country when it comes to policy innovation. It is to the states we turn for the variety of innovations out there.

There have been many proposals to install negative taxes on units of pollution emissions to incentivize companies to clean-up their processes. Several of these have been adopted.⁵⁴⁰ This is an area that states have tried to use positive tax incentives with as well. Ohio and Delaware are both considering substantial credits for those businesses cleaning up contaminated real estate.⁵⁴¹ California has offered tax credits for the purchase or development of low emission vehicles.⁵⁴² Other environmental effects incentivized include the Electric Vehicles Credit⁵⁴³ and California's exemption of recycled waste from operator and quarterly solid waste fees which is designed to encourage recycling.⁵⁴⁴

In addition to environmental prevention goals, there remains a number of clean-up efforts that need to be made. This is the reason for the reforestation credit and accelerated depreciation provisions of the Internal Revenue Code §§ 194 and 48(b)(1).⁵⁴⁵ The clean-up of real estate is also the subject of a number of state and federal laws, as well as, the new proposal of the President to offer tax deductions for brownfields clean-up.⁵⁴⁶ Ohio is considering substantial credits for those businesses cleaning up contaminated real estate.⁵⁴⁷

For businesses to be pushed faster through the "transition" period many of them are now going, upgrading of equipment is required - equipment that uses less fuel, that discharges pollution less, and that treats any pollution created. Therefore, equipment financing is a popular incentive states offered to the businesses attempting to help

⁵⁴⁰ For example, NEW JERSEY STAT. ANN. § 13:1E-138.

⁵⁴¹ Chalfant, *supra* note 519; DELAWARE CODE, Title 3, § 921 (1995).

⁵⁴² ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 357.

⁵⁴³ *Id.* citing Internal Revenue Code § 30. This provides a nonrefundable tax credit of 10% of the cost of certain qualified electric vehicles up to \$4000 per vehicle (those vehicles placed in service between 1993 and 2005). This incentive is designed to reduce air pollution.

⁵⁴⁴ *Id.* at 395.

⁵⁴⁵ *Id.*

⁵⁴⁶ Clinton, *supra* note 462.

⁵⁴⁷ Chalfant, *supra* note 519.

themselves. Alabama provides that certain facilities and equipment are given an exemption from *ad valorem* taxation.⁵⁴⁸ Massachusetts grants an exemption for any pollution reduction or treatment equipment and personal property.⁵⁴⁹ Arkansas gives an exemption from use taxes for machinery and equipment required by state law or regulations to be installed and utilized by manufacturing facilities to prevent or reduce air and/or water pollution.⁵⁵⁰ Oregon offers income tax credits for installation of pollution control facilities⁵⁵¹ and alternative energy devices and energy conservation facilities.⁵⁵² California grants a tax credit for the purchase and operation of recycling equipment.⁵⁵³ California allows rapid amortization of pollution control facilities' costs.⁵⁵⁴ Arizona has incentivized environmental technology industry to settle within the state.⁵⁵⁵

One area that has seen little innovation so far in the way of incentives are environmental innovations. Some commentators feel that all positive tax incentives should be turned toward this effort. Such innovations could be given exemptions from excise taxes, credits from income taxes or income tax abatements on any income generated by the innovation, both at the federal and state level.⁵⁵⁶ The idea is that in return for beneficial tax incentives, businesses will work on the achievement of new technological and social

⁵⁴⁸ ALABAMA CODE, § 40-9-1 (20) (1975), *cited in* Chemical Waste Management, Inc. v. State of Alabama, et al., 512 So. 2d 115 (Ct. App. 1987).

⁵⁴⁹ MASS. GENERAL LAWS Ch. 59 §5 - 44, *cited in* The Henry Perkins Company v. Board of Assessors of Bridgewater, 377 Mass. 117; 384 N.E.2d 1241 (S.J.C. 1979).

⁵⁵⁰ ARK. STAT. ANN. § 84-3106 (D)(2)(d), *cited in* Heath v. Research-Cottrell, Inc., 258 Ark. 813; 529 S.W.2d 336, (1975).

⁵⁵¹ OREGON STATUTES § 316.097.

⁵⁵² OREGON STATUTES §§ 316.116 and 316.140.

⁵⁵³ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456, at 357.

⁵⁵⁴ ENVIRONMENTAL TAX HANDBOOK: STRATEGIES FOR COMPLIANCE, *supra* note 456.

⁵⁵⁵ ARIZ. REV. STAT. § 41-10-1

⁵⁵⁶ This last suggestion would spur companies to more and more innovations with the prospect of tax-free income as their reward (even though the income would be tax-free for a limited period only).

innovations. Theoretically, these innovations will decrease pollution and enhance the environment to a degree far in excess of the marginal cost and use of the incentive money.⁵⁵⁷

E. Summary of Tax Incentives

Tax incentives offer a wide variety of challenges. First, there is deciding whether tax incentives are the proper incentive to correct the specific pollution problem at hand - and then which tax incentive to use. The second challenge is the challenge in attempting to define the particular action needed. Is it a positive or negative tax incentive? Positive environmental tax incentives come in many different forms and apply to almost any type of taxation. In fact, the matching of the right incentive with the right tax base and the right environmental goal is the most important aspect in the incentive effectively bringing about the desired result. This concept of linkage, then, requires in-depth knowledge of both the pollution problem at hand and the incentives available to use. Only by achieving close linkage while minimizing the administrative cost, can we be assured that the incentive is effective.

557

The United States has from time to time enacted temporary tax credits in order to stimulate the manufacture of creative environmental devices. The idea is to provide enough of an incentive to help bring novel technologies on line, but not enough to render the technology parasitical. It overlooks the concept of market failure; that is, it might be better policy to retain the incentive to the extent that new technology drives out other technologies that are inferior because of their unpriced environmental costs. . . . The incentives are now largely extinct because of former President Reagan's antipathy for them. Their effectiveness is uncertain. Twelve reported Government Accounting Office (GAO) studies tend to show that only relatively large tax credits are effective. These credits illustrate a pervasive problem of appropriate tailoring of their language, especially as to the issues of whether tax benefits were being granted for purchases that would have taken place anyway, or were too small to stimulate changed behavior.

Sanford E. Westin, *Understanding Environmental Taxes*, 46 TAX LAW 327 (1993).

Other factors in making tax incentives more effective include institutional cooperation, bundling positive and negative incentives, progressive implementation, keeping the tax system simple, and evaluating the results of the efforts.⁵⁵⁸

III. Environmental Incentives

A. Waivers

Rather than agreeing to indemnify contractors for any penalties or fines that may be levied, a stronger more direct incentive would be a negotiated waiver modification of the regulations that may be applicable to the contractors' operations.⁵⁵⁹ This is being done in the United States, though on a limited basis. Project XL (an acronym for "excellence" and "leadership") is a good example of the use of waivers as incentives.⁵⁶⁰ The idea behind the project is that companies can reduce pollution without costly compliance with every command and control type regulation on the books.⁵⁶¹ EPA, being pushed by the White House,⁵⁶² has agreed that with a certain number of companies and government agencies that they would relax their regulatory zeal to reward corporate environmentally beneficial actions with years of relief from the environmental bureaucracy and red tape.⁵⁶³ For example, Union Carbide Corporation officials have devised a method of disposing of wastes in truck-size containers instead of storing them in 55 gallon drums as presently required.⁵⁶⁴ Such

⁵⁵⁸ OECD, *supra* note 208, at 110 - 112.

⁵⁵⁹ The waiver may be permanent or only a variance that lasts a limited time. Such a variance would extend the deadline for complying with regulatory standards. New technology may need such a delay to allow implementation. Gollin, *supra* note 1.

⁵⁶⁰ Marianne Lavelle, *Bending the Rules*, THE NATIONAL LAW JOURNAL, Jun. 10, 1996, at 1.

⁵⁶¹ *Id.* at 1.

⁵⁶² Environmental Protection Agency, Regulatory Reinvention (XL) Pilot Projects, 60 Fed. Reg. 27,282 (proposed May 23, 1995).

⁵⁶³ Lavelle, *supra* note 560, at A17.

⁵⁶⁴ *Id.*

innovation that benefits the corporation and the environment has been called a "win-win" situation.⁵⁶⁵

However, such a seemingly simple idea is not simple at all and it is not a sure thing for the environment or for the company involved. First, the EPA is not fully on-board.⁵⁶⁶ They use words like "may consider changes to underlying regulations" and "may seek changes in underlying statutes."⁵⁶⁷ EPA feels that the regulated community should trust EPA discretion in prosecution to protect them.⁵⁶⁸ Further, EPA requires participating companies to reach a consensus with "stakeholders."⁵⁶⁹ These include members of the community, labor and all levels of government.⁵⁷⁰ Industry must convince these interested parties that they are not trying to evade needed environmental costs but rather the transaction costs.⁵⁷¹ Without total buy in from just about all parties concerned, an industry takes a great risk in plowing forward. The public, through citizen suits, can enforce the regulations and laws even when EPA agrees not to enforce.⁵⁷² Besides not having full EPA support, the large environmentalists, have been criticizing this program as not environmentally centered but economically centered.⁵⁷³ Companies are leery of moving out without assurances that EPA will not backtrack on enforcement relief.⁵⁷⁴

⁵⁶⁵ *Id.* The company wins as truck-size containers are less costly and less time consuming. The environment wins as the large container creates less possibility of loading skills or rupturing problems.

⁵⁶⁶ Environmental Protection Agency, Regulatory Reinvention (XL) Pilot Projects, *supra* note 562.

⁵⁶⁷ *Id.* at 27,287.

⁵⁶⁸ Ginsberg & Cummis, *supra* note 33.

⁵⁶⁹ Lavelle, *supra* note 560, at A17.

⁵⁷⁰ *Id.*

⁵⁷¹ *Id.* These include lawyers, consultants and delays in the regulatory process.

⁵⁷² Ginsberg & Cummis, *supra* note 33.

⁵⁷³ Lavelle, *supra* note 560, at A17.

⁵⁷⁴ *Id.*

Another problem is that because XL has no statutory basis, the EPA is afraid of the large innovative risk takers.⁵⁷⁵ For example, the EPA refused to allow the Pacific Marine Co. of Honolulu into the program even though they claimed that they could turn hazardous waste into harmless glass.⁵⁷⁶ Such a program "was too bold" for the EPA.⁵⁷⁷ The fact is that "permitters often shy away from approving unfamiliar technologies and tend to prefer environmental technologies with established track records."⁵⁷⁸ Further, powerful competitors of the cooperating admitted companies have been lobbying EPA relentlessly to tone back the project.⁵⁷⁹

Another example of the EPA shrinking away from using a waiver incentive is in the self-audit privilege debate. One of the largest obstacles to the more widespread use of self-audits is the examples of companies who have been hammered by penalties for volunteering information.⁵⁸⁰ In order for self review and audits to inspire innovativeness and a higher level of environmental compliance these reflexive processes must be open and genuinely self-critical.⁵⁸¹ Companies have a great fear of self-incrimination.⁵⁸² Most companies feel that regardless of good faith and no criminal intent, that environmental miscues happen from time to time and that the EPA and DOJ will take any released reports of audits and crucify the companies involved.⁵⁸³ Several states have enacted laws that would make audits privileged as long as the company made prompt correction of any discovered non-

⁵⁷⁵ *Id.*

⁵⁷⁶ *Id.*

⁵⁷⁷ *Id.*

⁵⁷⁸ H.R. REP. NO. 536, *supra* note 50, at 22.

⁵⁷⁹ Lavelle, *supra* note 560, at 1.

⁵⁸⁰ REITZE, *supra* note 32, at 908.

⁵⁸¹ Orts, *supra* note 4, at 1324.

⁵⁸² The fear is especially strong for small businesses whose owners are less insulated from criminal penalties than large corporations. *Small Manufacturers Realize Positive Economic Returns with Improved Environmental Management*, PR NEWswire, Nov. 21, 1995.

⁵⁸³ Goodrich testimony, *supra* note 249.

compliances.⁵⁸⁴ However, the EPA has come out with its guidance on such self-critical reports and has refused to bind itself in any way.⁵⁸⁵ In fact the opposite is true. Both EPA and DOJ have outwardly declared that they intend to keep all their enforcement options available and at their discretion.⁵⁸⁶ They are also threatening states that have enacted protection legislation.

B. Emissions Trading

1. Details

One of the more common environmental market-oriented incentives is marketable rights.⁵⁸⁷ This incentive uses government-issued permits that represent a certain amount of legally permitted pollution.⁵⁸⁸ These permits can be traded, bought, and sold.⁵⁸⁹ This system reduces pollution by limiting the overall pollution allowed by a certain industry, while encouraging innovation by externalizing the cost of not innovating.⁵⁹⁰ This approach uses an established command-and-control permit system and modifies it to allow for marketable pollution "rights" that are treated legally like property.⁵⁹¹ Of course, like any other property system, the government must have a recording function established that tracks

⁵⁸⁴ See e.g. COLO. REV. STAT. § 13-25-126.5 (1995).

⁵⁸⁵ Environmental Protection Agency, Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations, 60 Fed. Reg. 66,706 (effective Jan. 22, 1996).

⁵⁸⁶ *Id.*

⁵⁸⁷ Breger, *supra* note 17, at 465.

⁵⁸⁸ *Id.*

⁵⁸⁹ *Id.*

⁵⁹⁰ *Id.*

⁵⁹¹ Orts, *supra* note 4, at 1244. The idea of treating the environment as property to effect its preservation is attributed to Coase. His idea was if natural resources could be reduced to human ownership, then the property will become valuable and thus unlikely to be destroyed. "A good example is the suggestion that to prevent the extinction of elephants, people should own them. If elephants were property, then their value - including their ivory - will be protected by their human owners. Although some elephants will be killed for ivory, the species will survive, because property rights give their human owners an incentive to preserve their animals." *Id.*

trades and ownership title.⁵⁹² The idea is to have a continuing incentive to reduce emissions and of innovating new ways of making a profit on environmental control.⁵⁹³ There are two prerequisites to establishing this incentive: the pollution which is the basis for the incentive must be measurable and quantifiable and you must have a fairly large number of identifiable sources.⁵⁹⁴ The government contractor arena offers a heterogeneous but identifiable group of companies that through enforced competition have groups of similar pollution emissions.⁵⁹⁵

A variant of the marketable rights concept is the "bubble" approach.⁵⁹⁶ Groups of a number of emission sources with the same owner can be lumped together for emissions limit purposes, as if they were all under one "bubble." Therefore, the owner can allocate emissions reductions and increases among the sites within the bubble. This flexibility reduces the overall cost to the owner since he can manage his emissions by the cost-emission reduction factor of each of his sites.⁵⁹⁷

2. Examples

The market trading system is already being used in several instances, mostly dealing with the Clean Air Act.⁵⁹⁸ A market trading system was adopted to deal with sulfur dioxide emissions (acid rain) from the electric industry.⁵⁹⁹ A cap on total sulfur dioxide emissions

⁵⁹² *Id.* at 1245.

⁵⁹³ Breger, *supra* note 17, at 471. "Rather than investing in lawyers to litigate over EPA rulemaking, firms can invest in environmental engineers to devise innovative ways to reduce pollution and earn a profit by freeing up excess allowances to sell to others." *Id.*

⁵⁹⁴ *Id.* Without a sufficient number of players in the market, market power, hoarding and collusion become possible.

⁵⁹⁵ For example the aerospace industry, the weapons industry, the nuclear weapons industry, etc.

⁵⁹⁶ *Id.* This approach was made famous by *Chevron USA, Inc. v. NRDC*, 467 U.S. 837, *reh. denied*, 468 U.S. 1227 (1984) where the EPA was forced to adopt a plant-wide definition of a "stationary source."

⁵⁹⁷ Breger, *supra* note 17, at 471.

⁵⁹⁸ *Id.* at 465.

⁵⁹⁹ *Id.* at 465-466, 42 U.S.C.A. § 7401 - 7671q (1995).

was established and an emissions-credit trading system was set up.⁶⁰⁰ Electric utilities that emit below the cap set by the government can either save their emissions-credits for later use or they can sell their credits to other utilities.⁶⁰¹ The government is authorized to set up a similar system for the trading of ozone depleting chemicals⁶⁰² and a similar system was used for the phasedown of lead.⁶⁰³

3. Benefits

There are many general benefits of using market oriented incentives versus the present command and control regulations presently in place,⁶⁰⁴ however, there are specific benefits of a market trading system. This system retains the certainty of general reductions in overall pollution, while allowing the amount of reduction for each company to be determined by market forces - not the government.⁶⁰⁵ This prevents the government from being involved in the difficult, contentious, and lengthy debates about specific company allocations.⁶⁰⁶ Trading has allowed an increased reduction of emissions at a lower price tag.⁶⁰⁷ Besides helping the environment, emission credit sales can become a source of needed income to the company able to accumulate the credits.⁶⁰⁸ Once a company becomes part of the trading system, they become coopted into supporting the overall ceiling in order to protect their investment.⁶⁰⁹

⁶⁰⁰ *Id.* at 466.

⁶⁰¹ *Id.*

⁶⁰² REITZE, *supra* note 32, at 831.

⁶⁰³ *Id.* at 629.

⁶⁰⁴ *See discussion supra* at I.A.2.b.

⁶⁰⁵ *Id.* at 470.

⁶⁰⁶ *Id.*

⁶⁰⁷ *Id.*

⁶⁰⁸ *Id.* at 471.

⁶⁰⁹ *Id.* at 485.

4. Problems

There are some problems or "lessons learned" with market trading systems. First, they do not work with pollution "hot spots."⁶¹⁰ Because "hot spots" are localized disturbances, they do not provide the generalized base necessary for trading.⁶¹¹ Further, local "hot spots" can be created if one factory bought up all the emission credits and polluted like crazy.⁶¹² Such an incident might have serious effects on the local health and environment.⁶¹³

Another problem is that all types of industries or types of pollution are amenable to this type of system.⁶¹⁴ For example, a national emissions credit system was proposed that would allow trading between fuel refiners and automobile manufacturers.⁶¹⁵ Any automobile manufacturer or any fuel refiner could propose a different control level for its operations, as long as the national emissions ceiling didn't change.⁶¹⁶ The problem was that it gave industry the right to sell dirtier cars in one area of the country as long as cleaner cars were sold elsewhere as an offset.⁶¹⁷ One area of the country would never stand by and absorb the pollution so that other parts of the country can enjoy a cleaner environment.⁶¹⁸ Each citizen believes that the national pollution abatement system being implemented is being done to protect them.⁶¹⁹ The common denominator here is that market systems work best beyond-compliance where compliance standards are set above minimal health standards.

⁶¹⁰ *Id.* at 471.

⁶¹¹ *Id.*

⁶¹² *Id.*

⁶¹³ *Id.* Created "hot spots" are unlikely in that buying up all the credits would be prohibitively expensive. A seemingly easy solution would be to set a local "floor," based on a health standard, in the system to prevent such incidents.

⁶¹⁴ *Id.* at 481-482.

⁶¹⁵ *Id.* at 481.

⁶¹⁶ *Id.*

⁶¹⁷ *Id.* at 482.

⁶¹⁸ *Id.*

⁶¹⁹ *Id.*

This becomes almost a bar in the case of hazardous air pollutants listed in section 112 of the Clean Air Act.⁶²⁰ Chemicals like asbestos, beryllium, vinyl chloride, or benzene are too dangerous to allow their emissions to increase in exchange for a decrease in sulfur or particulates.⁶²¹ The public will not stand for an increase in their emissions in one locality so that we can decrease their emissions at a different locality.⁶²² The only market trades available for hazardous air pollutants may be a bubble concept.

Though market systems tend to be finer tuned in reducing pollution to appropriate levels business by business, there may be a loss to the environment overall of what some commentators call the "environmental opportunity cost."⁶²³ By legislating a certain generic standard for all businesses in an industry, as is common with our present command and control systems, there is a degree of over-cleaning with some businesses.⁶²⁴ This over-cleaning, or reduction of emissions far below health-based standards, helps the environment in the global perspective.⁶²⁵ Market systems, by being more closely attuned to the cost-cleaning ratio, eliminates this unintended environmental opportunity cost.⁶²⁶

The bottom line is that market trading systems are not the best option in all cases.⁶²⁷ As said before, the best alternative is a careful mix of many types of incentives and regulations.

⁶²⁰ Environmental Protection Agency, Air Pollution Control: Recommendation for Alternative Emission Reduction Options within State Implementation Plans, 44 Fed. Reg. 71,780 (to be codified at 40 C.F.R. pt. 52) (proposed Dec. 11, 1979), 10 ENVTL. L. REP. 30001, 3005.

⁶²¹ *Id.*

⁶²² *Id.*

⁶²³ *Id.* at 486.

⁶²⁴ *Id.*

⁶²⁵ *Id.*

⁶²⁶ *Id.*

⁶²⁷ Orts, *supra* note 4, at 1245.

C. Direct Subsidies

A direct subsidy involves a purely cash payment to incentivize a company to perform some environmentally beneficial act or service.⁶²⁸ "A good example of a 'green' subsidy would be paying people to install upgraded pollution control devices on their cars."⁶²⁹ In the government contract context, subsidies can be given through contracts, grants, cooperative agreements, CRADAs, and "other transactions."⁶³⁰ Each device offers different benefits or restrictions for the government agency looking to subsidize environmental innovation.⁶³¹

Contracts must be used when the principal purpose of the transaction is to acquire property or services for the direct benefit or use of the government,⁶³² or the agency decides in a specific instance that the use of a procurement contract is appropriate.⁶³³ Contracts must comply with the Federal Acquisition Regulation (FAR).⁶³⁴ A contract is the only method of subsidizing the contractor that requires them to complete certain tasks or research certain issues.⁶³⁵ The use of contracts to procure research and development of new technology or just basic research, is common.⁶³⁶

⁶²⁸ *Id.* at 1243.

⁶²⁹ *Id.* at 1243..

⁶³⁰ Authorization can be found in 10 U.S.C. 2511 (1994) for dual-use technologies.

⁶³¹ William A. Groves, Legal Issues Arising From the Award and Administration of Grants, Cooperative Agreements and Other Transactions 16 (Jul. 9, 1993), located in the Office of the Staff Judge Advocate, Ramstein AB, Germany; Office of Scientific Research, Bolling AFB, Washington, D.C.; and Air Force Material Command, Wright-Patterson AFB, OH.

⁶³² 31 U.S.C.A. 6303(1) (1994); DOD requires the inclusion of provisions that will allow the government to recover a portion of any nonrecourring costs that the contractor has recouped through commercial sales. See 48 C.F.R. § 270.002(a) (DFARS) (1994).

⁶³³ 31 U.S.C.A. § 6303(2) (1994).

⁶³⁴ 48 C.F.R. § 1.103; 2.101 (FAR) (1994).

⁶³⁵ BGen James C. Roan, Jr., Staff Judge Advocate Air Force Systems Command Legal Opinion (unknown date), located in the Office of the Staff Judge Advocate, Air Force Material Command, Wright-Patterson AFB, OH.

⁶³⁶ See U. S. ENVIRONMENTAL PROTECTION AGENCY & THE WHITE HOUSE, *supra* note 45, at 12-14.

Grants should be used when the principal purpose of the transaction is to support or stimulate research when no substantial involvement by the agency is expected.⁶³⁷ An agency must have statutory authority to issue grants.⁶³⁸ The law provides that a properly approved exemption to the normal rules allows the giving of a grant even though a contract or cooperative agreement is called for.⁶³⁹ The FAR does not apply to this device and the provisions are not legally enforceable against the contractor, except to the degree their reputation is affected for future projects.⁶⁴⁰ DOD policy prevents the military from giving grants to commercial entities for basic research.⁶⁴¹

Cooperative agreements should be used when the principal purpose of the transaction is to support or stimulate research when substantial involvement by the agency is expected and a grant or contract is not appropriate.⁶⁴² The FAR does not apply to this device and the provisions are not legally enforceable against the contractor, except to the degree their reputation is affected for future projects.⁶⁴³ The idea here is to create a relationship between the contractor and the government so that their combined efforts are greater than the sum of their separate abilities.

Cooperative Research and Development Agreements (CRDA or CRADA) are only open for use by federal laboratories.⁶⁴⁴ They were created by the Federal Technology Transfer Act⁶⁴⁵ to transfer government technology (but not government funds) to government contractors (among others). They can be used as an incentive when an important piece of technology would incentivize the further development of technology

⁶³⁷ 31 U.S.C.A. § 6304 (1994).

⁶³⁸ Groves, *supra* note 631, at 5.

⁶³⁹ *Id.* at 17. A grant specifically dictated by statute must be used as such. *Id.*

⁶⁴⁰ *Id.*

⁶⁴¹ Department of Defense Directive 3210.2, sect. D.1.a.

⁶⁴² 31 U.S.C.A. § 6305 (1994) & 10 U.S.C. § 2371 (1994).

⁶⁴³ Groves, *supra* note 631, at 17.

⁶⁴⁴ Marilyn Corbin, *DOD Acquisition: Contract, Grant, or Agreement - Which is Appropriate?*, CONT. MGMT., May 1993, at 26.

⁶⁴⁵ 15 U.S.C. § 3710 *et seq.*

beneficial to the public and consistent with the goals of the laboratory.⁶⁴⁶ Also transferable are man-hours, services, facilities, equipment, or other resources.⁶⁴⁷ Any patent royalties are usually split between the parties according to the CRADA provisions.⁶⁴⁸ Contractor costs can be charged to IR&D.⁶⁴⁹ The FAR does not apply to this device and the provisions are not legally enforceable against the contractor, except to the degree their reputation is affected for future projects.⁶⁵⁰ This is a way of subsidizing the contractor for its innovation without the need for funding.

"Other transactions"⁶⁵¹ is any transaction that is not one of the above where a contract is not appropriate.⁶⁵² It is limited to use by DOD.⁶⁵³ The FAR does not apply to this device and the provisions are not legally enforceable against the contractor, except to the degree their reputation is affected for future projects.⁶⁵⁴ It is mostly used to enter into transactions with companies that refuse to be party to a government contract, grant, cooperative agreement or CRADA.⁶⁵⁵ "Other transactions" can only be funded to 50% by government funds.⁶⁵⁶ This limits its incentive power.⁶⁵⁷

A direct subsidy approach is good to overcome one of the main problems with incentivizing contractors to environmentally innovate - lack of adequate funding.⁶⁵⁸ Contracts or grants can fully or partially fund the technology development which is then

⁶⁴⁶ Corbin, *supra* note 644.

⁶⁴⁷ *Id.*

⁶⁴⁸ Air Force Regulation 80-27, Jan. 31, 1990, superceded.

⁶⁴⁹ Roan AFSC legal opinion, *supra* note 635.

⁶⁵⁰ Groves, *supra* note 631, at 17.

⁶⁵¹ 10 U.S.C. § 2371 (1994).

⁶⁵² *Id.*

⁶⁵³ Richard N. Kuyath, *The Untapped Potential of the Department of Defense's "Other Transaction" Authority*, 24 PUB. CONT. L. J. 521, 522 (1995).

⁶⁵⁴ Groves, *supra* note 631, at 17.

⁶⁵⁵ Kuyath, *supra* note 653, at 523.

⁶⁵⁶ *Id.* at 529. The statute states this limitation as "to the extent practicable." 10 U.S.C. § 2371(d) (Supp. 1994).

⁶⁵⁷ The contractor's share of the transaction can be "in-kind" rather than cash. *Id.* at 540.

⁶⁵⁸ Gollin, *supra* note 1, at 10,171.

usable by both the government and the contractor.⁶⁵⁹ The government can condition grants and contracts on retaining patent rights, so that the taxpayer is partially reimbursed by royalties from successful technologies.⁶⁶⁰

IV. Conclusion

Environmental innovation offers a strong win-win solution to the environmental problems facing the government and the corporate world today. Government contractors, because of their close-working relationships with the government are especially sensitive to the environmental effects of their actions. Environmental innovation offers them a way to get beyond mere compliance and start managing their company's environmental aspects rather than merely reacting to clean-up notices from EPA, the states or DOD. Such innovation is even more valuable to the government who can use it throughout the government to effect exponential gains in the government's environmental arena. The government must take on the job of being the catalyst of innovation starting with their own contractors. Such a task can have a rippling effect that can bring about a wave of environmental innovation in this country. The President and Congress has made this idea central to their plans and have called on the government agencies to lead the way.

The government can do this through the careful use and mixing of regulation, laws and the positive incentives listed here. Many of these incentives are available for use now and others need either agency head approval and support or Congressional action. All of them should be considered in bringing about a ground swell of contractor innovation. The need for these incentives and the innovation they can bring about is clear. The President has stated that environmental innovation is a central purpose of the government. Each government worker must work to throw off the bureaucracy and the apathy and look for ways

⁶⁵⁹ *Id.*

⁶⁶⁰ *Id.*

of building some of these incentives into what we buy and what we build. Only by integrating these incentives into normal government procurement can we expect systematic contractor efforts at reducing pollution in this country.